

This safety data sheet was created pursuant to the requirements of:  
UK REACH Regulations (SI 2019/758 as amended)

**Supersedes date** 09-Sep-2024

**Revision date** 28-May-2025

**Revision Number** 5

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

|                                 |                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Code(s)</b>          | 00515                                                                                                                        |
| <b>Safety data sheet number</b> | 00515                                                                                                                        |
| <b>Product Name</b>             | 2-METHYLPENTANE-2,4-DIOL                                                                                                     |
| <b>Substance Name</b>           | 2-METHYLPENTANE-2,4-DIOL                                                                                                     |
| <b>Index No</b>                 | 603-053-00-3                                                                                                                 |
| <b>EC Number</b>                | 203-489-0                                                                                                                    |
| <b>CAS No</b>                   | 107-41-5                                                                                                                     |
| <b>Synonyms</b>                 | HEXYLENE GLYCOL, HEXYLENE GLYCOL MIN 99%, HEXYLENE GLYCOL ARA, HEXYLENE GLYCOL FEED, HEXYLENE GLYCOL BE, HEXYLENE GLYCOL ITA |
| <b>Pure substance/mixture</b>   | Substance                                                                                                                    |
| <b>Molecular weight</b>         | 118.1 g/mol                                                                                                                  |

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended use</b> | Solvent<br>Adhesives<br>Lubricant<br>Grease<br>Binder<br>Release agents<br>Cleaning agent<br>Coatings<br>Functional fluids<br>Laboratory reagent<br>Metal working fluids / rolling oils,<br>Additive for Agrochemicals<br>Fuels<br>road and construction products.<br>Industrial use<br>Professional use<br>Softeners<br>Cosmetics<br>Antifreeze<br>Chemical intermediate<br>Distribution of substance<br>Formulation & (re)packing of substances and mixtures.<br>Polymers<br>Resin<br>Leather and textiles<br>For further information, see attached Exposure Scenario |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**1.3. Details of the supplier of the safety data sheet****Supplier**

Univar Solutions UK Ltd  
Aquarius House  
6 Mid Point Business Park  
Bradford  
GBR

For further information, please contact

**E-mail address** SDS.EMEA@univarsolutions.com

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

**1.4. Emergency telephone number**

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture**

|                                   |                      |
|-----------------------------------|----------------------|
| Skin corrosion/irritation         | Category 2 - (H315)  |
| Serious eye damage/eye irritation | Category 2 - (H319)  |
| Reproductive toxicity             | Category 2 - (H361d) |

**2.2. Label elements****Signal word**

Warning

**Hazard statements**

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H361d - Suspected of damaging the unborn child

**Precautionary statements**

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P405 - Store locked up

**Additional information**

This product requires tactile warnings if supplied to the general public.

**2.3. Other hazards**

Pregnant women should not work with the product, if there is the least risk of exposure. Inhalation of high concentrations of

vapour/mist can cause headaches, dizziness and drowsiness. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Ingestion may cause irritation to mucous membranes. Flammable when hot. At high temperatures, thermal decomposition releases toxic products.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

| Chemical name                        | Weight-% | EC No (EU Index No)         | UK REACH registration number | Classification according to GB CLP (SI 2020/1567 as amended)   | Specific concentration limit (SCL) | M-Factor | M-Factor (long-term) |
|--------------------------------------|----------|-----------------------------|------------------------------|----------------------------------------------------------------|------------------------------------|----------|----------------------|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 | 100%     | 203-489-0<br>(603-053-00-3) | -                            | Skin Irrit. 2 (H315)<br>Eye Irrit. 2 (H319)<br>Repr. 2 (H361d) | -                                  | -        | -                    |

### Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration  $\geq 0.1\%$  (UK REACH Article 59)

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

|                                           |                                                                                                                                                                                                                                                                                     |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General advice</b>                     | Show this safety data sheet to the doctor in attendance. First aid personnel should wear appropriate protective equipment during any rescue. Use personal protection recommended in Section 8. Take off contaminated clothing and shoes immediately.                                |
| <b>Inhalation</b>                         | Get medical attention immediately if symptoms occur. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration.                                                             |
| <b>Eye contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists. |
| <b>Skin contact</b>                       | Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.                                                                                                                                              |
| <b>Ingestion</b>                          | Rinse mouth thoroughly with water. Drink plenty of water. Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.                                                                                                                |
| <b>Self-protection of the first aider</b> | Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).                                                                                                                                                                                       |

### 4.2. Most important symptoms and effects, both acute and delayed

|                   |                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Symptoms</b>   | Causes skin irritation. Causes serious eye irritation. Suspected of damaging the unborn child.                                                     |
| <b>Inhalation</b> | Coughing and/or wheezing. Difficulty in breathing. Inhalation of high concentrations of vapour/mist can cause headaches, dizziness and drowsiness. |
| <b>Eyes</b>       | Causes serious eye irritation.                                                                                                                     |
| <b>Dermal</b>     | Causes skin irritation. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.      |
| <b>Ingestion</b>  | Ingestion may cause irritation to mucous membranes                                                                                                 |

**4.3. Indication of any immediate medical attention and special treatment needed**

Note to doctors Treat symptomatically.

**SECTION 5: Firefighting measures****5.1. Extinguishing media**

**Suitable Extinguishing Media** Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray.

**Large Fire** CAUTION: Use of water spray when fighting fire may be inefficient.

**Unsuitable extinguishing media** Do not scatter spilled material with high pressure water streams.

**5.2. Special hazards arising from the substance or mixture**

**Specific hazards arising from the chemical** Thermal decomposition can lead to release of flammable and toxic products. Carbon dioxide. Carbon monoxide. Organic compounds. Vapours may form explosive mixtures with air. Pregnant women should not work with the product, if there is the least risk of exposure. Flammable when hot.

**5.3. Advice for firefighters**

**Special protective equipment and precautions for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment. Cool containers with flooding quantities of water until well after fire is out. Collect contaminated fire extinguishing water separately. Do not allow it to enter drains or surface water. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Do not touch or walk through spilled material. Use personal protection recommended in Section 8. Pregnant women should not work with the product, if there is the least risk of exposure. Vapours may form explosive mixtures with air. Take precautionary measures against static discharge. Use non sparking handtools and explosion-proof electric equipment. Evacuate personnel to safe areas. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid breathing dust/fume/gas/mist/vapours/spray. Prevent further leakage or spillage if safe to do so.

**Other information** Refer to protective measures listed in Sections 7 and 8.

**For emergency responders** Use personal protection recommended in Section 8.

**6.2. Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Collect spillage. Local authorities should be advised if significant spillages cannot be contained. Dam up with sand or inert earth (do not use combustible materials). Avoid release to the environment. Keep out of drains, sewers, ditches and waterways.

**6.3. Methods and material for containment and cleaning up**

**Methods for containment** Keep out of drains, sewers, ditches and waterways. Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Dam spills and pump to remove. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Clean contaminated objects and areas

thoroughly observing environmental regulations.

**Prevention of secondary hazards** Observe good chemical hygiene practices. See also section 7.

#### **6.4. Reference to other sections**

**Reference to other sections** See Section 7, 8, 13 for more information.

### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

**Advice on safe handling**

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. Take off contaminated clothing and wash it before reuse. Wear protective gloves/protective clothing and eye/face protection. Avoid contact with skin, eyes and inhalation of vapours. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Take precautionary measures against static discharge. Pregnant women should not work with the product, if there is the least risk of exposure. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers. Flammable when hot. Vapours may form explosive mixtures with air. Irritant. Provide appropriate local exhaust ventilation at machinery and at places where dust can be generated. Ensure that eyewash stations and safety showers are close to the workstation location. Wash skin thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. Ensure adequate ventilation.

**General hygiene considerations**

Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing should not be allowed out of the workplace. Take off all contaminated clothing and wash it before reuse. Remove contaminated clothing and protective equipment before entering eating areas. Ensure that eyewash stations and safety showers are close to the workstation location. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing.

#### **7.2. Conditions for safe storage, including any incompatibilities**

**Storage Conditions**

Store locked up. Keep containers tightly closed in a dry, cool and well-ventilated place. Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Protect from direct sunlight. Hygroscopic. Protect from moisture. Avoid contact with: Strong oxidising agents. Strong acids. Halides. Acid anhydrides. Strong bases. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Remove all sources of ignition. Provide a catch-tank in a bunded area. Keep only in original packaging.

**Packaging materials**

Suitable container/equipment material: stainless steel. Mild Steel. Aluminium. Carbon Steel. copper. Bronze. Synthetic material. Glass. High density polyethylene (HDPE).

#### **7.3. Specific end use(s)**

**Specific use(s)**

See section 1 for more information.

**Risk Management Methods (RMM)** The information required is contained in this Safety Data Sheet.

### **SECTION 8: Exposure controls/personal protection**

#### **8.1. Control parameters**

**Exposure Limits**

| Chemical name                        | United Kingdom                                                                           |
|--------------------------------------|------------------------------------------------------------------------------------------|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 | TWA: 25 ppm<br>TWA: 123 mg/m <sup>3</sup><br>STEL: 25 ppm<br>STEL: 123 mg/m <sup>3</sup> |

**Biological occupational exposure limits** This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

#### Derived No Effect Level (DNEL) - Workers

| Chemical name                        | Oral | Dermal                  | Inhalation                                                                                     |
|--------------------------------------|------|-------------------------|------------------------------------------------------------------------------------------------|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 |      | 63 mg/kg bw/day [4] [6] | 44.4 mg/m <sup>3</sup> [4] [6]<br>49 mg/m <sup>3</sup> [5] [6]<br>98 mg/m <sup>3</sup> [5] [7] |

[4] Systemic health effects.  
[5] Local health effects.  
[6] Long term.  
[7] Short term.

#### Derived No Effect Level (DNEL) - General Public

| Chemical name                        | Oral                      | Dermal                    | Inhalation                                                                                    |
|--------------------------------------|---------------------------|---------------------------|-----------------------------------------------------------------------------------------------|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 | 2.25 mg/kg bw/day [4] [6] | 22.5 mg/kg bw/day [4] [6] | 7.8 mg/m <sup>3</sup> [4] [6]<br>25 mg/m <sup>3</sup> [5] [6]<br>49 mg/m <sup>3</sup> [5] [7] |

[4] Systemic health effects.  
[5] Local health effects.  
[6] Long term.  
[7] Short term.

#### Predicted No Effect Concentration (PNEC)

| Chemical name                        | Freshwater | Freshwater<br>(intermittent release) | Marine water | Marine water<br>(intermittent release) | Air |
|--------------------------------------|------------|--------------------------------------|--------------|----------------------------------------|-----|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 | 0.429 mg/L | 4.29 mg/L                            | 0.0429 mg/L  |                                        |     |

| Chemical name                        | Freshwater<br>sediment    | Marine sediment            | Sewage treatment | Soil                | Food chain |
|--------------------------------------|---------------------------|----------------------------|------------------|---------------------|------------|
| 2-METHYLPENTANE-2,4-DIOL<br>107-41-5 | 1.59 mg/kg<br>sediment dw | 0.159 mg/kg<br>sediment dw | 20 mg/L          | 0.066 mg/kg soil dw |            |

## 8.2. Exposure controls

### Engineering controls

Ensure adequate ventilation. Ensure that eyewash stations and safety showers are close to the workstation location. Pregnant women should not work with the product, if there is the least risk of exposure. Apply technical measures to comply with the occupational exposure limits.

### Personal protective equipment

#### Eye/face protection

Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.

#### Hand protection

Wear suitable gloves. Impervious gloves. Polyvinyl chloride (PVC). Butyl rubber. Neoprene gloves. Viton™. Gloves must conform to standard EN 374. Ensure that the breakthrough

time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. NOTE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Skin and body protection</b>        | Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Clothing should include anti-static overalls, boots and gloves if there is a risk of ignition from static electricity. Wear fire resistant or flame retardant clothing. EN14605. EN13034.                                                                                                                                                                                                                                                                          |
| <b>Respiratory protection</b>          | In case of inadequate ventilation wear respiratory protection. Respirator with ABEK filter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>General hygiene considerations</b>  | Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing should not be allowed out of the workplace. Take off all contaminated clothing and wash it before reuse. Remove contaminated clothing and protective equipment before entering eating areas. Ensure that eyewash stations and safety showers are close to the workstation location. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. |
| <b>Environmental exposure controls</b> | Keep out of drains, sewers, ditches and waterways. Local authorities should be advised if significant spillages cannot be contained. Ensure all waste water is collected and treated via a waste water treatment plant.                                                                                                                                                                                                                                                                                                                                                                                 |

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|                        |                                |
|------------------------|--------------------------------|
| <b>Physical state</b>  | Liquid                         |
| <b>Appearance</b>      | Clear, Slightly viscous liquid |
| <b>Colour</b>          | Colourless                     |
| <b>Odour</b>           | Characteristic. Mild.          |
| <b>Odour threshold</b> | 50 ppm                         |

| <u>Property</u>                                | <u>Values</u>                                          | <u>Remarks • Method</u>                                      |
|------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------|
| <b>Melting point / freezing point</b>          | -50 °C                                                 | @ 1013 hPa.                                                  |
| <b>Initial boiling point and boiling range</b> | 197.5 °C                                               | @ 1013 hPa.                                                  |
| <b>Flammability</b>                            |                                                        | Not applicable.                                              |
| <b>Flammability Limit in Air</b>               |                                                        | No information available.                                    |
| <b>Upper flammability or explosive limits</b>  | 9.9%                                                   |                                                              |
| <b>Lower flammability or explosive limits</b>  | 1.0%                                                   |                                                              |
| <b>Flash point</b>                             | 97 °C                                                  | Pensky-Martens closed cup. ASTM D3828. IP 303. ISO DIN 3679. |
| <b>Autoignition temperature</b>                | 306 °C                                                 | No information available.                                    |
| <b>Decomposition temperature</b>               |                                                        | No information available.                                    |
| <b>pH</b>                                      | 7.0                                                    | No information available.                                    |
| <b>pH (as aqueous solution)</b>                |                                                        | No information available.                                    |
| <b>Kinematic viscosity</b>                     |                                                        | No information available.                                    |
| <b>Dynamic viscosity</b>                       | 34 mPa s                                               | @ 20 °C.                                                     |
| <b>Water solubility</b>                        | Soluble in water 6.88 g/100 mL                         | @ 25 °C.                                                     |
| <b>Solubility(ies)</b>                         | soluble in Ethanol Ether Acetone Aromatic hydrocarbons | No information available.                                    |
| <b>Partition coefficient</b>                   | < 1                                                    | Calculation method.                                          |
| <b>Vapour pressure</b>                         | 0.067 hPa @ 20°C                                       | No information available.                                    |
| <b>Relative density</b>                        |                                                        | No information available.                                    |
| <b>Bulk density</b>                            |                                                        | No information available                                     |
| <b>Liquid Density</b>                          | 0.923 g/mL                                             | @ 20 °C                                                      |
| <b>Relative vapour density</b>                 | 5.17                                                   | No information available.                                    |

|                            |                          |                 |
|----------------------------|--------------------------|-----------------|
| Particle characteristics   |                          | Not applicable. |
| Particle Size              | No information available |                 |
| Particle Size Distribution | No information available |                 |
| Explosive properties       | Not relevant             |                 |
| Oxidising properties       | Not relevant             |                 |

**9.2. Other information**

|                  |             |
|------------------|-------------|
| Molecular weight | 118.1 g/mol |
| Evaporation rate | 0.01        |

**SECTION 10: Stability and reactivity****10.1. Reactivity**

|            |                                                        |
|------------|--------------------------------------------------------|
| Reactivity | Violent reaction with: Acids. Strong oxidising agents. |
|------------|--------------------------------------------------------|

**10.2. Chemical stability**

|           |              |
|-----------|--------------|
| Stability | Hygroscopic. |
|-----------|--------------|

**Explosion data**

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

**10.3. Possibility of hazardous reactions**

|                                    |                           |
|------------------------------------|---------------------------|
| Possibility of hazardous reactions | No information available. |
|------------------------------------|---------------------------|

**10.4. Conditions to avoid**

|                     |                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions to avoid | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from moisture. Protect from direct sunlight. |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|

**10.5. Incompatible materials**

|                        |                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------|
| Incompatible materials | Strong acids. Strong oxidising agents. Halides. Acid anhydrides. Strong bases. Strong reducing agents. Acid chlorides. |
|------------------------|------------------------------------------------------------------------------------------------------------------------|

**10.6. Hazardous decomposition products**

|                                  |                                                                                                                                                   |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazardous decomposition products | Thermal decomposition can lead to release of flammable and toxic products. Carbon monoxide. Carbon dioxide (CO <sub>2</sub> ). Organic compounds. |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|

**SECTION 11: Toxicological information****11.1. Information on toxicological effects****Information on likely routes of exposure****Product Information**

|              |                                                                                                                                                                                                                                                                       |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation   | Specific test data for the substance or mixture is not available. Inhalation of vapours in high concentration may cause irritation of respiratory system. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. |
| Eye contact  | Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.                                                                                                         |
| Skin contact | Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components). Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.                                |
| Ingestion    | Specific test data for the substance or mixture is not available. Ingestion may cause irritation                                                                                                                                                                      |

to mucous membranes.

### Symptoms related to the physical, chemical and toxicological characteristics

**Symptoms** Causes skin irritation. Causes serious eye irritation. Suspected of damaging the unborn child.

### Acute toxicity

#### Numerical measures of toxicity

#### Component Information

| Chemical name            | Oral LD50          | Dermal LD50        | Inhalation LC50 |
|--------------------------|--------------------|--------------------|-----------------|
| 2-METHYLPENTANE-2,4-DIOL | > 2000 mg/kg (Rat) | > 2000 mg/kg (Rat) | -               |

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Skin corrosion/irritation** Classification based on data available for ingredients. Causes skin irritation.

#### 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method      | Species | Exposure route | Effective dose | Exposure time | Results                |
|-------------|---------|----------------|----------------|---------------|------------------------|
| Draize Test |         | Dermal         |                |               | Causes skin irritation |

**Serious eye damage/eye irritation** Classification based on data available for ingredients. Causes serious eye irritation.

#### 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method   | Species        | Exposure route | Effective dose | Exposure time | Results                       |
|----------|----------------|----------------|----------------|---------------|-------------------------------|
| OECD 405 | Rabbit         | eye            |                |               | Causes serious eye irritation |
|          | Human evidence | eye Vapour     | 50 ppm         |               | Causes serious eye irritation |

**Respiratory or skin sensitisation** Based on available data the classification criteria are not met.

#### 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method                                | Species    | Exposure route | Results               |
|---------------------------------------|------------|----------------|-----------------------|
| OECD Test No. 406: Skin Sensitisation | Guinea pig | Dermal         | Not a skin sensitiser |

**Germ cell mutagenicity** Based on available data, the classification criteria are not met.

#### Component Information

#### 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method                                                                                       | Species  | Results       |
|----------------------------------------------------------------------------------------------|----------|---------------|
| OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test                             | in vitro | Not mutagenic |
| OECD Test No. 471: Bacterial Reverse Mutation Test                                           | in vitro | Not mutagenic |
| OECD Test No. 476: In Vitro Mammalian Cell Gene Mutation Tests using the Hprt and xprt genes | in vitro | Not mutagenic |

**Carcinogenicity** No information available.

**Reproductive toxicity** Classification based on data available for ingredients. Suspected of damaging the unborn child.

## 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method   | Species | Results                                                                                                                                                                                       |
|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OECD 443 | Rat     | Absence of toxic effects on the reproductive system, at high dose, effects on offspring. NOAEL Oral Parental toxicity 800 mg/kg bw/d Fertility effects 250 mg/kg bw/d                         |
| OECD 421 | Rat     | Absence of toxic effects on the reproductive system, at high dose, effects on offspring. NOAEL Oral Parental toxicity 200 mg/kg Fertility effects 1000 mg/kg Developmental toxicity 500 mg/kg |
| OECD 414 | Rat     | Not classified NOAEL Oral Developmental toxicity 300 mg/kg bw/d Maternal toxicity 300 mg/kg bw/d                                                                                              |
| OECD 414 | Rabbit  | Not classified NOAEL Oral Maternal toxicity 600 mg/kg bw/d                                                                                                                                    |

**STOT - single exposure** No information available.

**STOT - repeated exposure** Based on available data the classification criteria are not met.

## Component Information

## 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method   | Species | Exposure route | Effective dose | Exposure time | Results |
|----------|---------|----------------|----------------|---------------|---------|
| OECD 408 | Rat     | Oral           | 450 mg/kg bw/d | 90 days       | NOAEL   |

**Aspiration hazard** No information available.

**Other adverse effects** No information available.

**SECTION 12: Ecological information****12.1. Toxicity**

**Ecotoxicity** Based on available data, the classification criteria are not met. The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

## 2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method                                                                                       | Species                             | Endpoint type | Effective dose | Exposure time | Results        |
|----------------------------------------------------------------------------------------------|-------------------------------------|---------------|----------------|---------------|----------------|
| OECD Test No. 203: Fish, Acute Toxicity Test or Equivalent.                                  | Oncorhynchus mykiss (rainbow trout) | LC50          | 9450 mg/L      | 96 hours      | Not classified |
| OECD Test No. 202: Daphnia sp., Acute Immobilisation Test or Equivalent.                     | Daphnia magna                       | EC50          | 3200 mg/L      | 48 hours      | Not classified |
| OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test or Equivalent. | Selenastrum capricornutum           | ErC50         | > 429 mg/L     | 72 hours      | Not classified |
| Bacteria toxicity                                                                            |                                     | EC50          | > 5000 mg/L    | 16 hours      |                |

**12.2. Persistence and degradability**

**Persistence and degradability** Readily biodegradable.

2-METHYLPENTANE-2,4-DIOL (107-41-5)

| Method                                                                                             | Exposure time | Value              | Results               |
|----------------------------------------------------------------------------------------------------|---------------|--------------------|-----------------------|
| OECD Test No. 301F: Ready Biodegradability: Manometric Respirometry Test (TG 301 F) or Equivalent. | 28 days       | 81% Biodegradation | Readily biodegradable |

**12.3. Bioaccumulative potential**

**Bioaccumulation** Not likely to bioaccumulate.

**Component Information**

| Chemical name            | Partition coefficient |
|--------------------------|-----------------------|
| 2-METHYLPENTANE-2,4-DIOL | < 1                   |

**12.4. Mobility in soil**

**Mobility in soil** Soluble in water.

**12.5. Results of PBT and vPvB assessment**

**PBT and vPvB assessment** The product does not contain any substance(s) classified as PBT or vPvB.

| Chemical name            | PBT and vPvB assessment         |
|--------------------------|---------------------------------|
| 2-METHYLPENTANE-2,4-DIOL | The substance is not PBT / vPvB |

**12.6. Other adverse effects**

No information available.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

**Waste from residues/unused products** Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority.

**Contaminated packaging** Empty remaining contents. Do not reuse empty containers. Empty containers should be taken to an approved waste handling site for recycling or disposal. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

**SECTION 14: Transport information****IATA**

|                                   |                |
|-----------------------------------|----------------|
| 14.1 UN number or ID number       | Not regulated  |
| 14.2                              |                |
| 14.3 Transport hazard class(es)   | Not regulated  |
| 14.4 Packing group                | Not regulated  |
| 14.5 Environmental hazards        | Not applicable |
| 14.6 Special precautions for user |                |
| Special Provisions                | None           |

**IMDG**

|                                 |                |
|---------------------------------|----------------|
| 14.1 UN number or ID number     | Not regulated  |
| 14.2 UN proper shipping name    | Not regulated  |
| 14.3 Transport hazard class(es) | Not regulated  |
| 14.4 Packing group              | Not regulated  |
| 14.5 Environmental hazards      | Not applicable |

**14.6 Special precautions for user****Special Provisions**

None

**14.7 Maritime transport in bulk according to IMO instruments**

No information available

**RID****14.1 UN number or ID number**

Not regulated

**14.2 UN proper shipping name**

Not regulated

**14.3 Transport hazard class(es)**

Not regulated

**14.4 Packing group**

Not regulated

**14.5 Environmental hazards**

Not applicable

**14.6 Special precautions for user****Special Provisions**

None

**ADR****14.1 UN number or ID number**

Not regulated

**14.2 UN proper shipping name**

Not regulated

**14.3 Transport hazard class(es)**

Not regulated

**14.4 Packing group**

Not regulated

**14.5 Environmental hazards**

Not applicable

**14.6 Special precautions for user****Special Provisions**

None

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Authorisations and/or restrictions on use:**

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

**Product restricted per REACH Annex XVII: 3**

| Chemical name                       | Restricted substance per REACH Annex XVII | Substance subject to authorisation per REACH Annex XIV |
|-------------------------------------|-------------------------------------------|--------------------------------------------------------|
| 2-METHYLPENTANE-2,4-DIOL - 107-41-5 | 75.                                       | -                                                      |

**Persistent Organic Pollutants**

Not applicable

**Export Notification requirements**

Not applicable

**Named dangerous substances per COMAH Regulations 2015 (as amended)**

Not applicable

**The Ozone-Depleting Substances Regulations 2015**

Not applicable

**The Biocidal Products Regulations 2001 (as amended)**

Not applicable

**The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)**

Not applicable

**Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)**

Not applicable

**International Inventories****TSCA**

Contact supplier for inventory compliance status

**DSL/NDL**

Contact supplier for inventory compliance status

**EINECS/ELINCS**

Contact supplier for inventory compliance status

**ENCS**

Contact supplier for inventory compliance status

|       |                                                  |
|-------|--------------------------------------------------|
| IECSC | Contact supplier for inventory compliance status |
| KECI  | Contact supplier for inventory compliance status |
| PICCS | Contact supplier for inventory compliance status |
| AIIC  | Contact supplier for inventory compliance status |
| NZIoC | Contact supplier for inventory compliance status |

**Legend:**

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AIIC** - Australian Inventory of Industrial Chemicals  
**NZIoC** - New Zealand Inventory of Chemicals

**15.2. Chemical safety assessment**

**Chemical Safety Report** A Chemical Safety Assessment has been carried out for this substance

**SECTION 16: Other information****Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of H-Statements referred to under section 3**

H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H361d - Suspected of damaging the unborn child

**Legend**

SVHC: Substances of Very High Concern for Authorisation:  
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances  
vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances

**Legend Section 8: Exposure controls/personal protection**

|                                                                  |                             |      |                                  |
|------------------------------------------------------------------|-----------------------------|------|----------------------------------|
| TWA                                                              | TWA (time-weighted average) | STEL | STEL (Short Term Exposure Limit) |
| Ceiling                                                          | Maximum limit value         | *    | Skin designation                 |
| +                                                                | Sensitisers                 |      |                                  |
| Revision Note SDS sections updated 1 2 3 4 5 6 7 8 9 10 11 12 16 |                             |      |                                  |

**Classification procedure**

|                                                                 |                       |
|-----------------------------------------------------------------|-----------------------|
| Classification according to Regulation (EC) No. 1272/2008 [CLP] | Method Used           |
| Acute oral toxicity                                             | On basis of test data |
| Acute dermal toxicity                                           | On basis of test data |
| Acute inhalation toxicity - gas                                 | Calculation method    |
| Acute inhalation toxicity - vapour                              | Calculation method    |
| Acute inhalation toxicity - dust/mist                           | Calculation method    |
| Skin corrosion/irritation                                       | Calculation method    |
| Serious eye damage/eye irritation                               | On basis of test data |
| Respiratory sensitisation                                       | Calculation method    |
| Skin sensitisation                                              | On basis of test data |
| Mutagenicity                                                    | On basis of test data |
| Carcinogenicity                                                 | Calculation method    |
| Reproductive toxicity                                           | On basis of test data |
| STOT - single exposure                                          | Calculation method    |
| STOT - repeated exposure                                        | On basis of test data |
| Acute aquatic toxicity                                          | On basis of test data |
| Chronic aquatic toxicity                                        | Calculation method    |
| Aspiration hazard                                               | Calculation method    |
| Ozone                                                           | Calculation method    |

**Key literature references and sources for data used to compile the SDS**

Agency for Toxic Substances and Disease Registry (ATSDR)  
U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)  
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA\_RAC)  
European Chemicals Agency (ECHA) (ECHA\_API)  
Environmental Protection Agency  
Acute Exposure Guideline Level(s) (AELG(s))  
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act  
U.S. Environmental Protection Agency High Production Volume Chemicals  
Food Research Journal  
Hazardous Substance Database  
International Uniform Chemical Information Database (IUCLID)  
National Institute of Technology and Evaluation (NITE)  
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)  
NIOSH (National Institute for Occupational Safety and Health)  
National Library of Medicine's ChemID Plus (NLM CIP)  
National Library of Medicine's PubMed database (NLM PUBMED)  
U.S. National Toxicology Program (NTP)  
New Zealand's Chemical Classification and Information Database (CCID)  
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications  
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme  
Organisation for Economic Co-operation and Development Screening Information Data Set  
World Health Organization

**Prepared By** N Bajaj  
**Supersedes date** 09-Sep-2024  
**Revision date** 28-May-2025

**This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)**  
**Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work**

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Formulation & (re)packing of substances and mixtures  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC2 - Formulation of preparations (mixtures)  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC2 - Formulation of preparations (mixtures)

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                        |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented            |

|                                          |                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /limit releases, dispersion and exposure | Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to           | 240 cm2                                                                                                                                                                                  |
| Indoor/Outdoor use                       | Indoor                                                                                                                                                                                   |
| Assumes process temperature up to        | 40 C                                                                                                                                                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |

|                                   |      |
|-----------------------------------|------|
| Assumes process temperature up to | 40 C |
|-----------------------------------|------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                       |                                    |
|-----------------------|------------------------------------|
| Process category(ies) | PROC15 - Use as laboratory reagent |
|-----------------------|------------------------------------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

#### Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

##### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

##### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                    | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|----------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal, long-term - systemic     | 0.03 mg/kg bw/d            | < 0.01                            |
| PROC1 - Use in closed process, no                        | Worker - dermal, long-term -              | 0.00992 mg/cm <sup>2</sup> |                                   |

|                                                                                                                                   |                                           |                         |        |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| likelihood of exposure                                                                                                            | local                                     |                         |        |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - combined, long-term - systemic   |                         | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - combined, long-term - systemic   |                         | 0.117  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC8a - Transfer of substance or preparation (charging/discharging)                                                              | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| from/to vessels/large containers at non dedicated facilities                                                                      |                                           |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - combined, long-term - systemic   |                         | 0.088 |

|                                    |                                              |                         |        |
|------------------------------------|----------------------------------------------|-------------------------|--------|
| PROC15 - Use as laboratory reagent | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent | Worker - dermal, long-term -<br>systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent | Worker - dermal, long-term -<br>local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent | Worker - combined, long-term<br>- systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Formulation & (re)packing of substances and mixtures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Main user group</b>                     | Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Environmental release category(ies)</b> | ERC2 - Formulation of preparations (mixtures)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising<br>PROC15 - Use as laboratory reagent |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC2 - Formulation of preparations (mixtures)

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                      |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                                                                                                                                  |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                |

|                                          |                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /limit releases, dispersion and exposure | Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to           | 240 cm2                                                                                                                                                                                  |
| Indoor/Outdoor use                       | Indoor                                                                                                                                                                                   |
| Assumes process temperature up to        | 100 C                                                                                                                                                                                    |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)                                                                                                                              |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |

|                                   |        |
|-----------------------------------|--------|
| Indoor/Outdoor use                | Indoor |
| Assumes process temperature up to | 40 C   |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                                                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### **Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)**

**Predicted No Effect Concentration (PNEC)**

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |

|                                                                                                                                     |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.391  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |

|                                                                                                                                     |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| and/or significant contact)                                                                                                         |                                           |                         |       |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or                                                                                                   | Worker - inhalative, short-term           | 4.924 mg/m <sup>3</sup> | 0.05  |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                   | - local                                   |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - combined, long-term - systemic   |                         | 0.088 |

|                                                                                                   |                                           |                         |        |
|---------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| weighing)                                                                                         |                                           |                         |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - systemic     | 0.686 mg/kg bw/d        | 0.016  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>  |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - combined, long-term - systemic   |                         | 0.072  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                | Worker - combined, long-term - systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Coatings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Main user group</b>                     | Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Environmental release category(ies)</b> | ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)<br>PROC7 - Industrial spraying<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC10 - Roller application or brushing<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising<br>PROC15 - Use as laboratory reagent |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of worker exposure

|                             |                                                          |
|-----------------------------|----------------------------------------------------------|
| Process category(ies)       | PROC1 - Use in closed process, no likelihood of exposure |
| Covers concentrations up to | 100%                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                                                                                                                                  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure         |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Use with local exhaust ventilation                                                                                                                                              |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)                 |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Use with local exhaust ventilation                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                |

|                                          |                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /limit releases, dispersion and exposure | Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to           | 480 cm <sup>2</sup>                                                                                                                                                                      |
| Indoor/Outdoor use                       | Indoor                                                                                                                                                                                   |
| Assumes process temperature up to        | 40 C                                                                                                                                                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Exposure duration                                                                      | Avoid carrying out operation for more than 4 hours                                                                                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95%                                                   |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 1500 cm <sup>2</sup>                                                                                                                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                        |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                   |
| Physical form of product                                                               | Liquid                                                                                                                                                                 |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                      |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed |

|                                   |                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------|
|                                   | Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 960 cm2                                                                                |
| Indoor/Outdoor use                | Indoor                                                                                 |
| Assumes process temperature up to | 40 C                                                                                   |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 95%<br>Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                                                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

#### **Predicted No Effect Concentration (PNEC)**

|                                   |                |
|-----------------------------------|----------------|
| <b>Freshwater</b>                 | 0.429 mg/l     |
| <b>Freshwater sediment</b>        | 1.59 mg/kg dw  |
| <b>Marine water</b>               | 0.0429 mg/l    |
| <b>Marine sediment</b>            | 0.159 mg/kg dw |
| <b>Soil</b>                       | 0.066 mg/kg dw |
| <b>Impact on Sewage Treatment</b> | 20 mg/l        |
| <b>Intermittent release</b>       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

#### Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |

|                                                                                                                                     |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - combined, long-term - systemic   |                         | 0.088  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |

|                                                                                                                                     |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| and/or significant contact)                                                                                                         |                                           |                         |       |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.121 |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233 |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211 |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - systemic     | 8.572 mg/kg bw/d        | 0.204 |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC7 - Industrial spraying                                                                                                         | Worker - combined, long-term - systemic   |                         | 0.437 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities       | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - combined, long-term - systemic   |                         | 0.088 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.242 |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC13 - Treatment of articles by dipping and pouring                                                                         | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                             | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                             | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                             | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |

|                                                                                                   |                                           |                         |        |
|---------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - systemic     | 0.686 mg/kg bw/d        | 0.016  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>  |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - combined, long-term - systemic   |                         | 0.072  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                | Worker - combined, long-term - systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Coatings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Main user group</b>                     | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Environmental release category(ies)</b> | ERC8a - Wide dispersive indoor use of processing aids in open systems<br>ERC8d - Wide dispersive outdoor use of processing aids in open systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC10 - Roller application or brushing<br>PROC11 - Non industrial spraying<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC15 - Use as laboratory reagent<br>PROC19 - Hand-mixing with intimate contact and only PPE available |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Sector(s) of use</b>                    | SU22 - Professional uses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure  |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Process category(ies)       | PROC1 - Use in closed process, no likelihood of exposure          |
| Covers concentrations up to | 100%                                                              |
| Physical form of product    | Liquid                                                            |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently). |

|                                                                                        |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented            |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                          |
| Assumes process temperature up to                                                      | 40 C                                                                            |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                |

|                                   |         |
|-----------------------------------|---------|
| exposure                          |         |
| Covers skin contact area up to    | 240 cm2 |
| Indoor/Outdoor use                | Indoor  |
| Assumes process temperature up to | 40 C    |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)                 |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Process category(ies) | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles |
|-----------------------|--------------------------------------------------------------------------------------------|

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        | (multi-stage and/or significant contact)                                                                                                                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out operation for more than 4 hours                                                                                                                                                             |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Process category(ies)                | PROC10 - Roller application or brushing                                                    |
| Covers concentrations up to          | 100%                                                                                       |
| Physical form of product             | Liquid                                                                                     |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).                          |
| Technical conditions and measures to | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) |

|                                                                                       |                                                                                                                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     | Local exhaust ventilation - efficiency of at least 90%                                                                                              |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                        | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                     |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |

|                                                                             |                                                                      |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------|
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented |
| Covers skin contact area up to                                              | 1500 cm2                                                             |
| Indoor/Outdoor use                                                          | Outdoor                                                              |
| Assumes process temperature up to                                           | 40 C                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC19 - Hand-mixing with intimate contact and only PPE available                                                                                                                                              |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC19 - Hand-mixing with intimate contact and only PPE available                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### **Predicted No Effect Concentration (PNEC)**

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### **Derived No Effect Level (DNEL):**

|                                        |                      |
|----------------------------------------|----------------------|
| Worker - dermal, long-term - systemic  | 63 mg/kg bw/d        |
| Worker - inhalative, long-term - local | 49 mg/m <sup>3</sup> |

|                                                    |                        |
|----------------------------------------------------|------------------------|
| <b>Worker - inhalative, long-term - systemic</b>   | 44.4 mg/m <sup>3</sup> |
| <b>Worker - inhalative, short-term - local</b>     | 98 mg/m <sup>3</sup>   |
| <b>Consumer - oral, long-term - systemic</b>       | 2.25 mg/kg bw/d        |
| <b>Consumer - dermal, long-term - systemic</b>     | 22.5 mg/kg bw/d        |
| <b>Consumer - inhalative, long-term - systemic</b> | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>    | 0.388                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>    | 0.388                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>    | 0.703                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.395                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |

|                                                                                                         |                                           |                         |        |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                          | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, long-term - systemic | 2.068 mg/m <sup>3</sup> | 0.047  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, long-term - local    | 2.068 mg/m <sup>3</sup> | 0.042  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, short-term - local   | 13.78 mg/m <sup>3</sup> | 0.141  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - combined, long-term - systemic   |                         | 0.079  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                | Worker - combined, long-term - systemic   |                         | 0.254  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |

|                                                                                                                                     |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| and/or significant contact)                                                                                                         |                                           |                         |       |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.287 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 2.068 mg/m <sup>3</sup> | 0.047 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 2.068 mg/m <sup>3</sup> | 0.042 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 13.78 mg/m <sup>3</sup> | 0.141 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.112 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or                                                                                                   | Worker - dermal, long-term -              | 0.2 mg/cm <sup>2</sup>  |       |

|                                                                                                                                            |                                              |                         |       |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
| preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities                                      | local                                        |                         |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.453 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, short-term<br>- local   | 16.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - dermal, long-term -<br>systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - dermal, long-term -<br>local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - combined, long-term<br>- systemic   |                         | 0.519 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, long-term<br>- systemic | 5.17 mg/m <sup>3</sup>  | 0.116 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, long-term<br>- local    | 5.17 mg/m <sup>3</sup>  | 0.106 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - inhalative, short-term<br>- local   | 34.46 mg/m <sup>3</sup> | 0.352 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - dermal, long-term -<br>systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - dermal, long-term -<br>local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or<br>brushing                                                                                                 | Worker - combined, long-term<br>- systemic   |                         | 0.247 |
| PROC11 - Non industrial spraying                                                                                                           | Worker - inhalative, long-term<br>- systemic | 10.34 mg/m <sup>3</sup> | 0.233 |
| PROC11 - Non industrial spraying                                                                                                           | Worker - inhalative, long-term<br>- local    | 10.34 mg/m <sup>3</sup> | 0.211 |
| PROC11 - Non industrial spraying                                                                                                           | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |

|                                                                   |                                           |                         |        |
|-------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC11 - Non industrial spraying                                  | Worker - dermal, long-term - systemic     | 10.71 mg/kg bw/d        | 0.225  |
| PROC11 - Non industrial spraying                                  | Worker - dermal, long-term - local        | 0.5 mg/cm2              |        |
| PROC11 - Non industrial spraying                                  | Worker - combined, long-term - systemic   |                         | 0.488  |
| PROC11 - Non industrial spraying                                  | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC11 - Non industrial spraying                                  | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC11 - Non industrial spraying                                  | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC11 - Non industrial spraying                                  | Worker - dermal, long-term - systemic     | 10.71 mg/kg bw/d        | 0.225  |
| PROC11 - Non industrial spraying                                  | Worker - dermal, long-term - local        | 0.5 mg/cm2              |        |
| PROC11 - Non industrial spraying                                  | Worker - combined, long-term - systemic   |                         | 0.643  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - dermal, long-term - local        | 0.4 mg/cm2              |        |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - combined, long-term - systemic   |                         | 0.287  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, long-term - systemic | 2.068 mg/m <sup>3</sup> | 0.047  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, long-term - local    | 2.068 mg/m <sup>3</sup> | 0.042  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - inhalative, short-term - local   | 13.78 mg/m <sup>3</sup> | 0.141  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - dermal, long-term - local        | 0.4 mg/cm2              |        |
| PROC13 - Treatment of articles by dipping and pouring             | Worker - combined, long-term - systemic   |                         | 0.112  |
| PROC15 - Use as laboratory reagent                                | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                | Worker - dermal, long-term - local        | 0.02 mg/cm2             |        |
| PROC15 - Use as laboratory reagent                                | Worker - combined, long-term - systemic   |                         | 0.39   |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, long-term - systemic | 8.617 mg/m <sup>3</sup> | 0.194  |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, long-term - local    | 8.617 mg/m <sup>3</sup> | 0.176  |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, short-term - local   | 34.46 mg/m <sup>3</sup> | 0.352  |
| PROC19 - Hand-mixing with intimate                                | Worker - dermal, long-term -              | 14.14 mg/kg bw/d        | 0.337  |

|                                                                   |                                           |                         |       |
|-------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| contact and only PPE available                                    | systemic                                  |                         |       |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - dermal, long-term - local        | 0.5 mg/cm <sup>2</sup>  |       |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - combined, long-term - systemic   |                         | 0.531 |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - dermal, long-term - systemic     | 14.14 mg/kg bw/d        | 0.337 |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - dermal, long-term - local        | 0.5 mg/cm <sup>2</sup>  |       |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - combined, long-term - systemic   |                         | 0.725 |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                           |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Coatings                                                                                                                                                                                                                                                                  |
| <b>Type</b>                                | Consumer                                                                                                                                                                                                                                                                  |
| <b>Main user group</b>                     | Consumer uses: Private households (= general public = consumers)                                                                                                                                                                                                          |
| <b>Environmental release category(ies)</b> | ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems                                                                                                                              |
| <b>Product category(ies)</b>               | PC1 - Adhesives, sealants PC4 - Anti-freeze and de-icing products PC9a - Coatings and paints, thinners, paint removers PC9b - Fillers, putties, plasters, modelling clay PC9c - Finger paints PC24 - Lubricants, greases, release products PC31 - Polishes and wax blends |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                  |
| <b>Sector(s) of use</b>                    | SU21 - Consumer uses                                                                                                                                                                                                                                                      |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of consumer exposure

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 15%                                                                                   |
| Amounts used                   | Amount per use <= 9 g                                                                 |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm <sup>2</sup>                                                                  |
| Indoor/Outdoor use             | Indoor                                                                                |

|                             |                                                                        |
|-----------------------------|------------------------------------------------------------------------|
| Product categories [PC]     | PC1 - Adhesives, sealants                                              |
| Covers concentrations up to | 0.5%                                                                   |
| Physical form of product    | Liquid                                                                 |
| Amounts used                | Amount per use <= 85 g                                                 |
| Exposure duration           | Avoid carrying out activities involving exposure for more than 4 hours |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently).      |

|                                |                      |
|--------------------------------|----------------------|
|                                | 1 events per day     |
| Covers skin contact area up to | 35.7 cm <sup>2</sup> |
| Indoor/Outdoor use             | Indoor               |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 2.8%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use ≤ 75 g                                                                 |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 1 hour                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm <sup>2</sup>                                                                  |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 5%                                                                                    |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use ≤ 0.5 g                                                                |
| Exposure duration              | Avoid carrying out operation for more than 0.02 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 1%                                                                                    |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use ≤ 2 kg                                                                 |
| Exposure duration              | Avoid carrying out operation for more than 0.17 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428.8 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 5%                                                                                    |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use ≤ 4 g                                                                  |
| Exposure duration              | Avoid carrying out operation for more than 0.25 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428.8 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC9a - Coatings and paints, thinners, paint removers                                  |
| Covers concentrations up to    | 0.55%                                                                                 |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use ≤ 491 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]     | PC9b - Fillers, putties, plasters, modelling clay                                     |
| Covers concentrations up to | 2%                                                                                    |
| Amounts used                | Amount per use ≤ 85 g                                                                 |
| Exposure duration           | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |

|                                |          |
|--------------------------------|----------|
| Covers skin contact area up to | 35.7 cm2 |
| Indoor/Outdoor use             | Indoor   |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC9b - Fillers, putties, plasters, modelling clay                                     |
| Covers concentrations up to    | 0.02%                                                                                 |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 13.8 kg                                                             |
| Exposure duration              | Avoid carrying out operation for more than 2 hours                                    |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC9b - Fillers, putties, plasters, modelling clay                                     |
| Covers concentrations up to    | 0.85%                                                                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC9c - Finger paints                                                                  |
| Covers concentrations up to    | 0.25%                                                                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 1.2%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 2.2 kg                                                              |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 1.2%                                                                                  |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 0.6%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 73 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428 cm2                                                                               |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC31 - Polishes and wax blends                                                        |
| Covers concentrations up to    | 1.2%                                                                                  |
| Amounts used                   | Amount per use <= 142 g                                                               |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

Product categories [PC] PC31 - Polishes and wax blends

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Covers concentrations up to    | 1.2%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 35 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

#### Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

#### Calculation method

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

| Product category(ies)     | Exposure route                              | predicted exposure level | Risk characterisation ratio (RCR) |
|---------------------------|---------------------------------------------|--------------------------|-----------------------------------|
| PC1 - Adhesives, sealants | Consumer - inhalative, long-term - systemic | 1.985 mg/m <sup>3</sup>  | 0.255                             |
| PC1 - Adhesives, sealants | Consumer - dermal, long-term - systemic     | 0.892 mg/kg bw/d         | 0.059                             |
| PC1 - Adhesives, sealants | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d             | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - combined, long-term - systemic   |                          | 0.314                             |
| PC1 - Adhesives, sealants | Consumer - inhalative, long-term - systemic | 6.254 mg/m <sup>3</sup>  | 0.802                             |
| PC1 - Adhesives, sealants | Consumer - dermal, long-term - systemic     | 0.03 mg/kg bw/d          | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d             | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - combined, long-term - systemic   |                          | 0.804                             |

|                                                         |                                                |                         |        |
|---------------------------------------------------------|------------------------------------------------|-------------------------|--------|
| PC1 - Adhesives, sealants                               | Consumer - inhalative,<br>long-term - systemic | 6.562 mg/m <sup>3</sup> | 0.841  |
| PC1 - Adhesives, sealants                               | Consumer - dermal, long-term<br>- systemic     | 0.167 mg/kg bw/d        | 0.011  |
| PC1 - Adhesives, sealants                               | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC1 - Adhesives, sealants                               | Consumer - combined,<br>long-term - systemic   |                         | 0.852  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - inhalative,<br>long-term - systemic | 0.124 mg/m <sup>3</sup> | 0.016  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - dermal, long-term<br>- systemic     | 7.146 mg/kg bw/d        | 0.476  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - combined,<br>long-term - systemic   |                         | 0.492  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - inhalative,<br>long-term - systemic | 4.537 mg/m <sup>3</sup> | 0.582  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - dermal, long-term<br>- systemic     | 0.715 mg/kg bw/d        | 0.048  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - combined,<br>long-term - systemic   |                         | 0.629  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - inhalative,<br>long-term - systemic | 0.87 mg/m <sup>3</sup>  | 0.111  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - dermal, long-term<br>- systemic     | 3.573 mg/kg bw/d        | 0.238  |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products              | Consumer - combined,<br>long-term - systemic   |                         | 0.35   |
| PC9a - Coatings and paints, thinners,<br>paint removers | Consumer - inhalative,<br>long-term - systemic | 3.971 mg/m <sup>3</sup> | 0.509  |
| PC9a - Coatings and paints, thinners,<br>paint removers | Consumer - dermal, long-term<br>- systemic     | 0.786 mg/kg bw/d        | 0.052  |
| PC9a - Coatings and paints, thinners,<br>paint removers | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC9a - Coatings and paints, thinners,<br>paint removers | Consumer - combined,<br>long-term - systemic   |                         | 0.562  |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - inhalative,<br>long-term - systemic | 2.5 mg/m <sup>3</sup>   | 0.321  |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - dermal, long-term<br>- systemic     | 0.119 mg/kg bw/d        | < 0.01 |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - combined,<br>long-term - systemic   |                         | 0.328  |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - inhalative,<br>long-term - systemic | 6.273 mg/m <sup>3</sup> | 0.804  |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - dermal, long-term<br>- systemic     | 0.029 mg/kg bw/d        | < 0.01 |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - combined,<br>long-term - systemic   |                         | 0.806  |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - inhalative,<br>long-term - systemic | 0 mg/m <sup>3</sup>     | < 0.01 |
| PC9b - Fillers, putties, plasters,<br>modelling clay    | Consumer - dermal, long-term<br>- systemic     | 2.162 mg/kg bw/d        | 0.114  |
| PC9b - Fillers, putties, plasters,                      | Consumer - oral, long-term -                   | 0.85 mg/kg bw/d         | 0.567  |

|                                                   |                                             |                         |        |
|---------------------------------------------------|---------------------------------------------|-------------------------|--------|
| modelling clay                                    | systemic                                    |                         |        |
| PC9b - Fillers, putties, plasters, modelling clay | Consumer - combined, long-term - systemic   |                         | 0.711  |
| PC9c - Finger paints                              | Consumer - inhalative, long-term - systemic | 0 mg/m <sup>3</sup>     | < 0.01 |
| PC9c - Finger paints                              | Consumer - dermal, long-term - systemic     | 0.636 mg/kg bw/d        | 0.042  |
| PC9c - Finger paints                              | Consumer - oral, long-term - systemic       | 0.338 mg/kg bw/d        | 0.225  |
| PC9c - Finger paints                              | Consumer - combined, long-term - systemic   |                         | 0.267  |
| PC24 - Lubricants, greases, release products      | Consumer - inhalative, long-term - systemic | 0.388 mg/m <sup>3</sup> | 0.05   |
| PC24 - Lubricants, greases, release products      | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC24 - Lubricants, greases, release products      | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products      | Consumer - combined, long-term - systemic   |                         | 0.164  |
| PC24 - Lubricants, greases, release products      | Consumer - inhalative, long-term - systemic | 0 mg/m <sup>3</sup>     | < 0.01 |
| PC24 - Lubricants, greases, release products      | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC24 - Lubricants, greases, release products      | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products      | Consumer - combined, long-term - systemic   |                         | 0.114  |
| PC24 - Lubricants, greases, release products      | Consumer - inhalative, long-term - systemic | 6.441 mg/m <sup>3</sup> | 0.826  |
| PC24 - Lubricants, greases, release products      | Consumer - dermal, long-term - systemic     | 0.429 mg/kg bw/d        | 0.029  |
| PC24 - Lubricants, greases, release products      | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products      | Consumer - combined, long-term - systemic   |                         | 0.854  |
| PC31 - Polishes and wax blends                    | Consumer - inhalative, long-term - systemic | 2.506 mg/m <sup>3</sup> | 0.321  |
| PC31 - Polishes and wax blends                    | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC31 - Polishes and wax blends                    | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC31 - Polishes and wax blends                    | Consumer - combined, long-term - systemic   |                         | 0.436  |
| PC31 - Polishes and wax blends                    | Consumer - inhalative, long-term - systemic | 6.176 mg/m <sup>3</sup> | 0.792  |
| PC31 - Polishes and wax blends                    | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC31 - Polishes and wax blends                    | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC31 - Polishes and wax blends                    | Consumer - combined, long-term - systemic   |                         | 0.906  |

## Section 4 - Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Use in cleaning agents  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles  
**Process category(ies)** PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC7 - Industrial spraying  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC10 - Roller application or brushing  
 PROC13 - Treatment of articles by dipping and pouring  
 PROC15 - Use as laboratory reagent  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure   |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |

|                                                                             |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| health evaluation                                                           | Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                                                                                                                 |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                              | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                           | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |

|                                   |         |
|-----------------------------------|---------|
| Covers skin contact area up to    | 480 cm2 |
| Indoor/Outdoor use                | Indoor  |
| Assumes process temperature up to | 40 C    |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95%                                                   |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 25%                                                                                                                                                                                                                                                              |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Process category(ies)                | PROC15 - Use as laboratory reagent                                                         |
| Covers concentrations up to          | 100%                                                                                       |
| Physical form of product             | Liquid                                                                                     |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).                          |
| Technical conditions and measures to | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     |                                                                                                                                                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

#### Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

#### Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------|
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>  | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>  | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>  | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d         | < 0.01                            |

|                                                                                          |                                           |                         |        |
|------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - combined, long-term - systemic   |                         | 0.117  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - combined, long-term - systemic   |                         | 0.117  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC7 - Industrial spraying                                                              | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC7 - Industrial spraying                                                              | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC7 - Industrial spraying                                                              | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC7 - Industrial spraying                                                              | Worker - dermal, long-term -              | 8.572 mg/kg bw/d        | 0.204  |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
|                                                                                                                                   | systemic                                  |                         |       |
| PROC7 - Industrial spraying                                                                                                       | Worker - dermal, long-term - local        | 0.4 mg/cm2              |       |
| PROC7 - Industrial spraying                                                                                                       | Worker - combined, long-term - systemic   |                         | 0.592 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, long-term - systemic | 20.68 mg/m <sup>3</sup> | 0.466 |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, long-term - local    | 20.68 mg/m <sup>3</sup> | 0.422 |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, short-term - local   | 82.72 mg/m <sup>3</sup> | 0.844 |
| PROC10 - Roller application or brushing                                                                                           | Worker - dermal, long-term - systemic     | 3.929 mg/kg bw/d        | 0.078 |

|                                                       |                                           |                         |        |
|-------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC10 - Roller application or brushing               | Worker - dermal, long-term - local        | 0.24 mg/cm <sup>2</sup> |        |
| PROC10 - Roller application or brushing               | Worker - combined, long-term - systemic   |                         | 0.544  |
| PROC10 - Roller application or brushing               | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC10 - Roller application or brushing               | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC10 - Roller application or brushing               | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC10 - Roller application or brushing               | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC10 - Roller application or brushing               | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC10 - Roller application or brushing               | Worker - combined, long-term - systemic   |                         | 0.463  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring | Worker - combined, long-term - systemic   |                         | 0.176  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                    | Worker - combined, long-term - systemic   |                         | 0.39   |

## **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Use in cleaning agents  
**Type** Worker  
**Main user group** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8b - Wide dispersive indoor use of reactive substances in open systems  
**Process category(ies)** PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC10 - Roller application or brushing  
 PROC11 - Non industrial spraying  
 PROC13 - Treatment of articles by dipping and pouring  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU22 - Professional uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8b - Wide dispersive indoor use of reactive substances in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                            |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure              |
| Covers concentrations up to                                                            | 100%                                                                                       |
| Physical form of product                                                               | Liquid                                                                                     |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                          |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) |
| Conditions and measures related to                                                     | Wear suitable face shield                                                                  |

|                                                                             |                                                                                                                        |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| personal protection, hygiene and health evaluation                          | Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented                                                   |
| Covers skin contact area up to                                              | 480 cm2                                                                                                                |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                 |
| Assumes process temperature up to                                           | 40 C                                                                                                                   |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                        |

|                                   |         |
|-----------------------------------|---------|
| Indoor/Outdoor use                | Outdoor |
| Assumes process temperature up to | 40 C    |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Process category(ies)       | PROC10 - Roller application or brushing                           |
| Covers concentrations up to | 25%                                                               |
| Physical form of product    | Liquid                                                            |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently). |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (10 to 15 air changes per hour)                                                                   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                         |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |

|                                                                             |                                                                                                                             |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| health evaluation                                                           | Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented                                                        |
| Covers skin contact area up to                                              | 960 cm2                                                                                                                     |
| Indoor/Outdoor use                                                          | Outdoor                                                                                                                     |
| Assumes process temperature up to                                           | 40 C                                                                                                                        |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 25%                                                                                                                                                                                                            |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                     |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 25%                                                                                                                                                                                                            |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8b - Wide dispersive indoor use of reactive substances in open systems**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------|
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>  | 0.388                             |
| PROC2 - Use in closed, continuous                                             | Worker - inhalative, long-term            | 17.23 mg/m <sup>3</sup>  | 0.388                             |

|                                                                                          |                                            |                         |        |
|------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------|--------|
| process with occasional controlled exposure                                              | - local                                    |                         |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, short-term<br>- local | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term - systemic      | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term - local         | 0.04 mg/cm <sup>2</sup> |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - combined, long-term - systemic    |                         | 0.395  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - systemic  | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - local     | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, short-term - local    | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - systemic      | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - local         | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term - systemic    |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic  | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local     | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term - local    | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - systemic      | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - local         | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term - systemic    |                         | 0.365  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic  | 2.068 mg/m <sup>3</sup> | 0.047  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local     | 2.068 mg/m <sup>3</sup> | 0.042  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term - local    | 13.78 mg/m <sup>3</sup> | 0.141  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - systemic      | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - local         | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term - systemic    |                         | 0.079  |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| for exposure arises                                                                                                               |                                           |                         |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.254 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 16.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| from/to vessels/large containers at dedicated facilities                                                                      |                                           |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 22.15 mg/m <sup>3</sup> | 0.499 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 22.15 mg/m <sup>3</sup> | 0.452 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 88.63 mg/m <sup>3</sup> | 0.904 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 3.292 mg/kg bw/d        | 0.078 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.24 mg/cm <sup>2</sup> |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.577 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 7.386 mg/m <sup>3</sup> | 0.166 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 7.386 mg/m <sup>3</sup> | 0.151 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 49.23 mg/m <sup>3</sup> | 0.502 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.297 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 7.386 mg/m <sup>3</sup> | 0.166 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 7.386 mg/m <sup>3</sup> | 0.151 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 49.23 mg/m <sup>3</sup> | 0.502 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.297 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 8.617 mg/m <sup>3</sup> | 0.194 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 8.617 mg/m <sup>3</sup> | 0.176 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 34.46 mg/m <sup>3</sup> | 0.352 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.325 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, short-term - local   | 41.36 mg/m <sup>3</sup> | 0.422 |
| PROC11 - Non industrial spraying                                                                                              | Worker - dermal, long-term -              | 12.85 mg/kg bw/d        | 0.306 |

|                                                       |                                           |                         |        |
|-------------------------------------------------------|-------------------------------------------|-------------------------|--------|
|                                                       | systemic                                  |                         |        |
| PROC11 - Non industrial spraying                      | Worker - dermal, long-term - local        | 0.6 mg/cm2              |        |
| PROC11 - Non industrial spraying                      | Worker - combined, long-term - systemic   |                         | 0.539  |
| PROC11 - Non industrial spraying                      | Worker - inhalative, long-term - systemic | 12.40 mg/m <sup>3</sup> | 0.279  |
| PROC11 - Non industrial spraying                      | Worker - inhalative, long-term - local    | 12.40 mg/m <sup>3</sup> | 0.253  |
| PROC11 - Non industrial spraying                      | Worker - inhalative, short-term - local   | 82.72 mg/m <sup>3</sup> | 0.844  |
| PROC11 - Non industrial spraying                      | Worker - dermal, long-term - systemic     | 12.85 mg/kg bw/d        | 0.306  |
| PROC11 - Non industrial spraying                      | Worker - dermal, long-term - local        | 0.6 mg/cm2              |        |
| PROC11 - Non industrial spraying                      | Worker - combined, long-term - systemic   |                         | 0.586  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - local        | 0.4 mg/cm2              |        |
| PROC13 - Treatment of articles by dipping and pouring | Worker - combined, long-term - systemic   |                         | 0.398  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - local        | 0.02 mg/cm2             |        |
| PROC15 - Use as laboratory reagent                    | Worker - combined, long-term - systemic   |                         | 0.39   |

## **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Use in cleaning agents  
**Type** Consumer  
**Main user group** Consumer uses: Private households (= general public = consumers)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems  
**Product category(ies)** PC3 - Air care products PC4 - Anti-freeze and de-icing products PC24 - Lubricants, greases, release products PC35 - Washing and cleaning products (including solvent based products)  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of consumer exposure

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC3 - Air care products                                                               |
| Covers concentrations up to    | 40%                                                                                   |
| Amounts used                   | Amount per use <= 0.1 g                                                               |
| Exposure duration              | Avoid carrying out operation for more than 0.25 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>4 events per day |
| Indoor/Outdoor use             | Indoor                                                                                |
| Product categories [PC]        | PC3 - Air care products                                                               |
| Covers concentrations up to    | 10%                                                                                   |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 0.48 g                                                              |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm <sup>2</sup>                                                                  |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 1%                                                                                    |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 0.5 g                                                               |
| Exposure duration              | Avoid carrying out operation for more than 0.02 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 0.07%                                                                                 |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 2 kg                                                                |
| Exposure duration              | Avoid carrying out operation for more than 0.17 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC4 - Anti-freeze and de-icing products                                               |
| Covers concentrations up to    | 2.7%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 4 g                                                                 |
| Exposure duration              | Avoid carrying out operation for more than 0.25 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 0.2%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 2.2 kg                                                              |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 1.2%                                                                                  |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 0.6%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 73 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428.8 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                             |                                                                         |
|-----------------------------|-------------------------------------------------------------------------|
| Product categories [PC]     | PC35 - Washing and cleaning products (including solvent based products) |
| Covers concentrations up to | 5%                                                                      |
| Amounts used                | Amount per use 15 g                                                     |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Exposure duration              | Avoid carrying out activities involving exposure for more than 1 hour                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC35 - Washing and cleaning products (including solvent based products)               |
| Covers concentrations up to    | 0.68%                                                                                 |
| Amounts used                   | Amount per use 27 g                                                                   |
| Exposure duration              | Avoid carrying out operation for more than 0.33 hours                                 |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC35 - Washing and cleaning products (including solvent based products)               |
| Covers concentrations up to    | 1.3%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 30 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

|                       |                |                          |                                   |
|-----------------------|----------------|--------------------------|-----------------------------------|
| Product category(ies) | Exposure route | predicted exposure level | Risk characterisation ratio (RCR) |
|-----------------------|----------------|--------------------------|-----------------------------------|

|                                                 |                                                |                         |        |
|-------------------------------------------------|------------------------------------------------|-------------------------|--------|
| PC3 - Air care products                         | Consumer - inhalative,<br>long-term - systemic | 6.957 mg/m <sup>3</sup> | 0.892  |
| PC3 - Air care products                         | Consumer - dermal, long-term<br>- systemic     | 0 mg/kg bw/d            | < 0.01 |
| PC3 - Air care products                         | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC3 - Air care products                         | Consumer - combined,<br>long-term - systemic   |                         | 0.892  |
| PC3 - Air care products                         | Consumer - inhalative,<br>long-term - systemic | 0.041 mg/m <sup>3</sup> | < 0.01 |
| PC3 - Air care products                         | Consumer - dermal, long-term<br>- systemic     | 0.595 mg/kg bw/d        | 0.04   |
| PC3 - Air care products                         | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC3 - Air care products                         | Consumer - combined,<br>long-term - systemic   |                         | 0.045  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - inhalative,<br>long-term - systemic | 0.025 mg/m <sup>3</sup> | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - dermal, long-term<br>- systemic     | 1.429 mg/kg bw/d        | 0.095  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - combined,<br>long-term - systemic   |                         | 0.098  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - inhalative,<br>long-term - systemic | 6.352 mg/m <sup>3</sup> | 0.814  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - dermal, long-term<br>- systemic     | 0.1 mg/kg bw/d          | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - combined,<br>long-term - systemic   |                         | 0.821  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - inhalative,<br>long-term - systemic | 0.47 mg/m <sup>3</sup>  | 0.06   |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - dermal, long-term<br>- systemic     | 3.859 mg/kg bw/d        | 0.257  |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC4 - Anti-freeze and de-icing<br>products      | Consumer - combined,<br>long-term - systemic   |                         | 0.317  |
| PC24 - Lubricants, greases, release<br>products | Consumer - inhalative,<br>long-term - systemic | 6.471 mg/m <sup>3</sup> | 0.83   |
| PC24 - Lubricants, greases, release<br>products | Consumer - dermal, long-term<br>- systemic     | 0.286 mg/kg bw/d        | 0.019  |
| PC24 - Lubricants, greases, release<br>products | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release<br>products | Consumer - combined,<br>long-term - systemic   |                         | 0.849  |
| PC24 - Lubricants, greases, release<br>products | Consumer - inhalative,<br>long-term - systemic | 0 mg/m <sup>3</sup>     | < 0.01 |
| PC24 - Lubricants, greases, release<br>products | Consumer - dermal, long-term<br>- systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC24 - Lubricants, greases, release<br>products | Consumer - oral, long-term -<br>systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release<br>products | Consumer - combined,<br>long-term - systemic   |                         | 0.114  |
| PC24 - Lubricants, greases, release<br>products | Consumer - inhalative,<br>long-term - systemic | 6.441 mg/m <sup>3</sup> | 0.826  |
| PC24 - Lubricants, greases, release<br>products | Consumer - dermal, long-term<br>- systemic     | 0.429 mg/kg bw/d        | 0.029  |
| PC24 - Lubricants, greases, release             | Consumer - oral, long-term -                   | 0 mg/kg bw/d            | < 0.01 |

|                                                                         |                                             |                         |        |
|-------------------------------------------------------------------------|---------------------------------------------|-------------------------|--------|
| products                                                                | systemic                                    |                         |        |
| PC24 - Lubricants, greases, release products                            | Consumer - combined, long-term - systemic   |                         | 0.854  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - inhalative, long-term - systemic | 2.344 mg/m <sup>3</sup> | 0.3    |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - dermal, long-term - systemic     | 7.146 mg/kg bw/d        | 0.476  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - combined, long-term - systemic   |                         | 0.777  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - inhalative, long-term - systemic | 0.766 mg/m <sup>3</sup> | 0.098  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - dermal, long-term - systemic     | 0.972 mg/kg bw/d        | 0.065  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - combined, long-term - systemic   |                         | 0.163  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - inhalative, long-term - systemic | 5.735 mg/m <sup>3</sup> | 0.735  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - dermal, long-term - systemic     | 1.858 mg/kg bw/d        | 0.124  |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC35 - Washing and cleaning products (including solvent based products) | Consumer - combined, long-term - systemic   |                         | 0.859  |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Oil field drilling and production operations  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                        |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented            |

|                                          |                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /limit releases, dispersion and exposure | Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to           | 240 cm2                                                                                                                                                                                  |
| Indoor/Outdoor use                       | Indoor                                                                                                                                                                                   |
| Assumes process temperature up to        | 40 C                                                                                                                                                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |

|                                   |        |
|-----------------------------------|--------|
| Indoor/Outdoor use                | Indoor |
| Assumes process temperature up to | 40 C   |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                             |                                                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)       | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities |
| Covers concentrations up to | 100%                                                                                                                              |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                      |                                                                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| Covers concentrations up to          | 100%                                                                                                                          |
| Physical form of product             | Liquid                                                                                                                        |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).                                                             |
| Technical conditions and measures to | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                 |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     | Local exhaust ventilation - efficiency of at least 95%                                                                                                                                                                                                           |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

**Predicted No Effect Concentration (PNEC)**

**Freshwater** 0.429 mg/l

|                                   |                |
|-----------------------------------|----------------|
| <b>Freshwater sediment</b>        | 1.59 mg/kg dw  |
| <b>Marine water</b>               | 0.0429 mg/l    |
| <b>Marine sediment</b>            | 0.159 mg/kg dw |
| <b>Soil</b>                       | 0.066 mg/kg dw |
| <b>Impact on Sewage Treatment</b> | 20 mg/l        |
| <b>Intermittent release</b>       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                                    |                        |
|----------------------------------------------------|------------------------|
| <b>Worker - dermal, long-term - systemic</b>       | 63 mg/kg bw/d          |
| <b>Worker - inhalative, long-term - local</b>      | 49 mg/m <sup>3</sup>   |
| <b>Worker - inhalative, long-term - systemic</b>   | 44.4 mg/m <sup>3</sup> |
| <b>Worker - inhalative, short-term - local</b>     | 98 mg/m <sup>3</sup>   |
| <b>Consumer - oral, long-term - systemic</b>       | 2.25 mg/kg bw/d        |
| <b>Consumer - dermal, long-term - systemic</b>     | 22.5 mg/kg bw/d        |
| <b>Consumer - inhalative, long-term - systemic</b> | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup>    | 0.603                             |

|                                                                                          |                                           |                         |        |
|------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term - systemic   |                         | 0.088  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other                                                           | Worker - inhalative, short-term           | 68.93 mg/m <sup>3</sup> | 0.703  |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| process (synthesis) where opportunity for exposure arises                                                                         | - local                                   |                         |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.421 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| dedicated facilities                                                                                                              |                                           |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |

|                                                                                                                               |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                   | local                                     |                         |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - combined, long-term - systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Lubricants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Main user group</b>                     | Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Environmental release category(ies)</b> | ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)<br>PROC7 - Industrial spraying<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC10 - Roller application or brushing<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC15 - Use as laboratory reagent<br>PROC17 - Lubrication at high energy conditions and in partly open process<br>PROC18 - Greasing at high energy conditions |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of worker exposure

|                             |                                                          |
|-----------------------------|----------------------------------------------------------|
| Process category(ies)       | PROC1 - Use in closed process, no likelihood of exposure |
| Covers concentrations up to | 100%                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                                                                                                                                  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises |
| Covers concentrations up to                                                            | 100%                                                                                     |
| Physical form of product                                                               | Liquid                                                                                   |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                        |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)         |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)                                                                                                                              |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95%                                                   |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities       |
| Covers concentrations up to                                                            | 100%                                                                                                                                    |
| Physical form of product                                                               | Liquid                                                                                                                                  |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95% |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                         |

|                                                                             |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| health evaluation                                                           | Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                                                                                                                 |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                              | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                           | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                               |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                 |
| Covers concentrations up to                                                            | 100%                                                                                                                                                          |
| Physical form of product                                                               | Liquid                                                                                                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%           |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs |

|                                   |                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------|
| exposure                          | followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 960 cm2                                                                                            |
| Indoor/Outdoor use                | Indoor                                                                                             |
| Assumes process temperature up to | 40 C                                                                                               |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |

|                                   |        |
|-----------------------------------|--------|
| Indoor/Outdoor use                | Indoor |
| Assumes process temperature up to | 40 C   |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                             |                                    |
|-----------------------------|------------------------------------|
| Process category(ies)       | PROC15 - Use as laboratory reagent |
| Covers concentrations up to | 100%                               |
| Physical form of product    | Liquid                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC17 - Lubrication at high energy conditions and in partly open process                                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC18 - Greasing at high energy conditions                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### **Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

**Predicted No Effect Concentration**

(PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |

|                                                                                                                                     |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.453  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - systemic     | 8.572 mg/kg bw/d        | 0.204  |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC7 - Industrial spraying                                                                                                         | Worker - combined, long-term              |                         | 0.437  |

|                                                                                                                                   |                                              |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
|                                                                                                                                   | - systemic                                   |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term<br>- systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term<br>- local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term<br>- local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or                                                                                                 | Worker - dermal, long-term -                 | 2.742 mg/kg bw/d        | 0.065 |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                   | systemic                                  |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including                         | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |

|                                                                                                                 |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| weighing)                                                                                                       |                                           |                         |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - combined, long-term - systemic   |                         | 0.088 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - combined, long-term - systemic   |                         | 0.088 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603 |
| PROC10 - Roller application or brushing                                                                         | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or brushing                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or brushing                                                                         | Worker - combined, long-term - systemic   |                         | 0.463 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |

|                                                                           |                                           |                         |        |
|---------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC10 - Roller application or brushing                                   | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC10 - Roller application or brushing                                   | Worker - combined, long-term - systemic   |                         | 0.242  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - combined, long-term - systemic   |                         | 0.176  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                        | Worker - combined, long-term - systemic   |                         | 0.39   |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - combined, long-term - systemic   |                         | 0.352  |
| PROC18 - Greasing at high energy conditions                               | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC18 - Greasing at high energy conditions                               | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC18 - Greasing at high energy conditions                               | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC18 - Greasing at high energy conditions                               | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC18 - Greasing at high energy conditions                               | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC18 - Greasing at high energy conditions                               | Worker - combined, long-term - systemic   |                         | 0.287  |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Lubricants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Main user group</b>                     | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Environmental release category(ies)</b> | ERC8a - Wide dispersive indoor use of processing aids in open systems<br>ERC8d - Wide dispersive outdoor use of processing aids in open systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC10 - Roller application or brushing<br>PROC11 - Non industrial spraying<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC15 - Use as laboratory reagent<br>PROC17 - Lubrication at high energy conditions and in partly open process<br>PROC18 - Greasing at high energy conditions<br>PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sector(s) of use</b>                    | SU22 - Professional uses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of worker exposure

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Process category(ies) | PROC1 - Use in closed process, no likelihood of exposure |
|-----------------------|----------------------------------------------------------|

|                                                                                        |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented            |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                          |
| Assumes process temperature up to                                                      | 40 C                                                                            |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises |
| Covers concentrations up to                                                            | 100%                                                                                     |
| Physical form of product                                                               | Liquid                                                                                   |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                        |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)         |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)          |

|                                                                             |                                                                      |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------|
| health evaluation                                                           | Wear suitable gloves tested to EN 374 Efficiency of at least 80%     |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented |
| Covers skin contact area up to                                              | 480 cm2                                                              |
| Indoor/Outdoor use                                                          | Indoor                                                               |
| Assumes process temperature up to                                           | 40 C                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |

|                                   |      |
|-----------------------------------|------|
| Assumes process temperature up to | 40 C |
|-----------------------------------|------|

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                             |                                                                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| Process category(ies)       | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| Covers concentrations up to | 100%                                                                                                            |
| Physical form of product    | Liquid                                                                                                          |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                             |
| Covers concentrations up to                                                            | 5%                                                                                                                                                  |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 5%                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                         |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                   |
| Covers concentrations up to                                                            | 100%                                                                                                                                    |
| Physical form of product                                                               | Liquid                                                                                                                                  |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                         |

|                                                                             |                                                                      |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------|
| health evaluation                                                           | Wear suitable gloves tested to EN 374 Efficiency of at least 80%     |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented |
| Covers skin contact area up to                                              | 480 cm2                                                              |
| Indoor/Outdoor use                                                          | Indoor                                                               |
| Assumes process temperature up to                                           | 40 C                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC17 - Lubrication at high energy conditions and in partly open process                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC18 - Greasing at high energy conditions                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |
| Process category(ies)                                                                  | PROC19 - Hand-mixing with intimate contact and only PPE available                                                                                   |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                    | Exposure route                            | predicted exposure level | Risk characterisation ratio (RCR) |
|----------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>  | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>  | < 0.01                            |
| PROC1 - Use in closed process, no                        | Worker - inhalative, short-term           | 0.197 mg/m <sup>3</sup>  | < 0.01                            |

|                                                                                                                                   |                                           |                         |        |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| likelihood of exposure                                                                                                            | - local                                   |                         |        |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d        | < 0.01 |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - dermal, long-term - local        | 0.00992 mg/cm2          |        |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - combined, long-term - systemic   |                         | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - combined, long-term - systemic   |                         | 0.395  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.365  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC8a - Transfer of substance or preparation (charging/discharging)                                                              | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| from/to vessels/large containers at non dedicated facilities                                                                      |                                           |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| from/to vessels/large containers at dedicated facilities                                                                      |                                           |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - combined, long-term - systemic   |                         | 0.254 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 4.432 mg/m <sup>3</sup> | 0.1   |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 4.432 mg/m <sup>3</sup> | 0.09  |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, short-term - local   | 29.54 mg/m <sup>3</sup> | 0.301 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - systemic     | 1.097 mg/kg bw/d        | 0.026 |
| PROC10 - Roller application or brushing                                                                                       | Worker - dermal, long-term - local        | 0.08 mg/cm2             |       |
| PROC10 - Roller application or brushing                                                                                       | Worker - combined, long-term - systemic   |                         | 0.126 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, long-term - systemic | 5.909 mg/m <sup>3</sup> | 0.133 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, long-term - local    | 5.909 mg/m <sup>3</sup> | 0.121 |
| PROC11 - Non industrial spraying                                                                                              | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC11 - Non industrial spraying                                                                                              | Worker - dermal, long-term - systemic     | 4.286 mg/kg bw/d        | 0.102 |
| PROC11 - Non industrial spraying                                                                                              | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC11 - Non industrial spraying                                                                                              | Worker - combined, long-term              |                         | 0.235 |

|                                                                                               |                                           |                         |        |
|-----------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
|                                                                                               | - systemic                                |                         |        |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring                                         | Worker - combined, long-term - systemic   |                         | 0.287  |
| PROC15 - Use as laboratory reagent                                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                            | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                            | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                            | Worker - combined, long-term - systemic   |                         | 0.39   |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - inhalative, long-term - systemic | 7.386 mg/m <sup>3</sup> | 0.166  |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - inhalative, long-term - local    | 7.386 mg/m <sup>3</sup> | 0.151  |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - inhalative, short-term - local   | 49.23 mg/m <sup>3</sup> | 0.502  |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC17 - Lubrication at high energy conditions and in partly open process                     | Worker - combined, long-term - systemic   |                         | 0.297  |
| PROC18 - Greasing at high energy conditions                                                   | Worker - inhalative, long-term - systemic | 12.31 mg/m <sup>3</sup> | 0.277  |
| PROC18 - Greasing at high energy conditions                                                   | Worker - inhalative, long-term - local    | 12.31 mg/m <sup>3</sup> | 0.251  |
| PROC18 - Greasing at high energy conditions                                                   | Worker - inhalative, short-term - local   | 49.23 mg/m <sup>3</sup> | 0.502  |
| PROC18 - Greasing at high energy conditions                                                   | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC18 - Greasing at high energy conditions                                                   | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC18 - Greasing at high energy conditions                                                   | Worker - combined, long-term - systemic   |                         | 0.343  |
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - dermal, long-term - systemic     | 0.342 mg/kg bw/d        | < 0.01 |

|                                                                                               |                                         |             |       |
|-----------------------------------------------------------------------------------------------|-----------------------------------------|-------------|-------|
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - dermal, long-term - local      | 0.05 mg/cm2 |       |
| PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems | Worker - combined, long-term - systemic |             | 0.119 |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Lubricants  
**Type** Consumer  
**Main user group** Consumer uses: Private households (= general public = consumers)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems  
**Product category(ies)** PC1 - Adhesives, sealants PC24 - Lubricants, greases, release products PC31 - Polishes and wax blends  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of consumer exposure

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 14%                                                                                   |
| Amounts used                   | Amount per use <= 0.009 kg                                                            |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm <sup>2</sup>                                                                  |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 0.09%                                                                                 |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 6.39 kg                                                             |
| Exposure duration              | Avoid carrying out operation for more than 6 hours                                    |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428.8 cm <sup>2</sup>                                                                 |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Indoor/Outdoor use             | Indoor                                                                                |
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 0.5%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 85.05 kg                                                            |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm2                                                                              |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC1 - Adhesives, sealants                                                             |
| Covers concentrations up to    | 5.5%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 75 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 35.7 cm2                                                                              |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 0.2%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 2.2 kg                                                              |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 1.2%                                                                                  |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC24 - Lubricants, greases, release products                                          |
| Covers concentrations up to    | 0.6%                                                                                  |
| Physical form of product       | Liquid                                                                                |
| Amounts used                   | Amount per use <= 73 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 428.8 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]        | PC31 - Polishes and wax blends                                                        |
| Covers concentrations up to    | 1.2%                                                                                  |
| Amounts used                   | Amount per use <= 142 g                                                               |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm2                                                                             |
| Indoor/Outdoor use             | Indoor                                                                                |

|                             |                                |
|-----------------------------|--------------------------------|
| Product categories [PC]     | PC31 - Polishes and wax blends |
| Covers concentrations up to | 1.2%                           |
| Physical form of product    | Liquid                         |

|                                |                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------|
| Amounts used                   | Amount per use <= 35 g                                                                |
| Exposure duration              | Avoid carrying out activities involving exposure for more than 4 hours                |
| Use frequency                  | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Covers skin contact area up to | 857.5 cm <sup>2</sup>                                                                 |
| Indoor/Outdoor use             | Indoor                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

#### Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

#### Calculation method

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

| Product category(ies)     | Exposure route                              | predicted exposure level | Risk characterisation ratio (RCR) |
|---------------------------|---------------------------------------------|--------------------------|-----------------------------------|
| PC1 - Adhesives, sealants | Consumer - inhalative, long-term - systemic | 1.853 mg/m <sup>3</sup>  | 0.238                             |
| PC1 - Adhesives, sealants | Consumer - dermal, long-term - systemic     | 0.833 mg/kg bw/d         | 0.056                             |
| PC1 - Adhesives, sealants | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d             | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - combined, long-term - systemic   |                          | 0.293                             |
| PC1 - Adhesives, sealants | Consumer - inhalative, long-term - systemic | 6.251 mg/m <sup>3</sup>  | 0.801                             |
| PC1 - Adhesives, sealants | Consumer - dermal, long-term - systemic     | 0.064 mg/kg bw/d         | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d             | < 0.01                            |
| PC1 - Adhesives, sealants | Consumer - combined, long-term - systemic   |                          | 0.806                             |
| PC1 - Adhesives, sealants | Consumer - inhalative, long-term - systemic | 6.254 mg/m <sup>3</sup>  | 0.802                             |

|                                              |                                             |                         |        |
|----------------------------------------------|---------------------------------------------|-------------------------|--------|
| PC1 - Adhesives, sealants                    | Consumer - dermal, long-term - systemic     | 0.03 mg/kg bw/d         | < 0.01 |
| PC1 - Adhesives, sealants                    | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC1 - Adhesives, sealants                    | Consumer - combined, long-term - systemic   |                         | 0.804  |
| PC1 - Adhesives, sealants                    | Consumer - inhalative, long-term - systemic | 6.066 mg/m <sup>3</sup> | 0.778  |
| PC1 - Adhesives, sealants                    | Consumer - dermal, long-term - systemic     | 0.327 mg/kg bw/d        | 0.022  |
| PC1 - Adhesives, sealants                    | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC1 - Adhesives, sealants                    | Consumer - combined, long-term - systemic   |                         | 0.8    |
| PC24 - Lubricants, greases, release products | Consumer - inhalative, long-term - systemic | 6.471 mg/m <sup>3</sup> | 0.83   |
| PC24 - Lubricants, greases, release products | Consumer - dermal, long-term - systemic     | 0.286 mg/kg bw/d        | 0.019  |
| PC24 - Lubricants, greases, release products | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products | Consumer - combined, long-term - systemic   |                         | 0.849  |
| PC24 - Lubricants, greases, release products | Consumer - inhalative, long-term - systemic | 0 mg/m <sup>3</sup>     | < 0.01 |
| PC24 - Lubricants, greases, release products | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC24 - Lubricants, greases, release products | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products | Consumer - combined, long-term - systemic   |                         | 0.114  |
| PC24 - Lubricants, greases, release products | Consumer - inhalative, long-term - systemic | 6.441 mg/m <sup>3</sup> | 0.826  |
| PC24 - Lubricants, greases, release products | Consumer - dermal, long-term - systemic     | 0.429 mg/kg bw/d        | 0.029  |
| PC24 - Lubricants, greases, release products | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC24 - Lubricants, greases, release products | Consumer - combined, long-term - systemic   |                         | 0.854  |
| PC31 - Polishes and wax blends               | Consumer - inhalative, long-term - systemic | 2.506 mg/m <sup>3</sup> | 0.321  |
| PC31 - Polishes and wax blends               | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC31 - Polishes and wax blends               | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC31 - Polishes and wax blends               | Consumer - combined, long-term - systemic   |                         | 0.436  |
| PC31 - Polishes and wax blends               | Consumer - inhalative, long-term - systemic | 6.176 mg/m <sup>3</sup> | 0.792  |
| PC31 - Polishes and wax blends               | Consumer - dermal, long-term - systemic     | 1.715 mg/kg bw/d        | 0.114  |
| PC31 - Polishes and wax blends               | Consumer - oral, long-term - systemic       | 0 mg/kg bw/d            | < 0.01 |
| PC31 - Polishes and wax blends               | Consumer - combined, long-term - systemic   |                         | 0.906  |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where

other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Metal working fluids                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Main user group</b>                     | Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Environmental release category(ies)</b> | ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)<br>PROC7 - Industrial spraying<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC10 - Roller application or brushing<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC15 - Use as laboratory reagent<br>PROC17 - Lubrication at high energy conditions and in partly open process<br>PROC18 - Greasing at high energy conditions |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of worker exposure

|                             |                                                          |
|-----------------------------|----------------------------------------------------------|
| Process category(ies)       | PROC1 - Use in closed process, no likelihood of exposure |
| Covers concentrations up to | 100%                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                                                                                                                                  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure         |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)                                                                                                                              |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                     |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |

|                                                                             |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                              | 1500 cm2                                                                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                           | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                        |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                   |
| Physical form of product                                                               | Liquid                                                                                                                                                                 |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                      |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed |

|                                   |                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------|
|                                   | Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 960 cm2                                                                                |
| Indoor/Outdoor use                | Indoor                                                                                 |
| Assumes process temperature up to | 40 C                                                                                   |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                                                                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC17 - Lubrication at high energy conditions and in partly open process                                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                      |                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                | PROC17 - Lubrication at high energy conditions and in partly open process     |
| Covers concentrations up to          | 100%                                                                          |
| Physical form of product             | Liquid                                                                        |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     | Local exhaust ventilation - efficiency of at least 95%                                                                                                                                                                                                           |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                        | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC18 - Greasing at high energy conditions                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                           |                        |
|-------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic     | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local    | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local   | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic     | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic   | 22.5 mg/kg bw/d        |

**Consumer - inhalative, long-term - systemic**

**7.8 mg/m<sup>3</sup>**

**Calculation method**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup>    | 0.603                             |

|                                                                                                                                     |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm2              |        |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                         | 0.121  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211  |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - systemic     | 8.572 mg/kg bw/d        | 0.204  |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm2              |        |
| PROC7 - Industrial spraying                                                                                                         | Worker - combined, long-term - systemic   |                         | 0.437  |
| PROC8a - Transfer of substance or                                                                                                   | Worker - inhalative, long-term            | 4.924 mg/m <sup>3</sup> | 0.111  |

|                                                                                                                                            |                                              |                         |       |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
| preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities                                      | - systemic                                   |                         |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, short-term<br>- local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - combined, long-term<br>- systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, short-term<br>- local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at                             | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| dedicated facilities                                                                                                          |                                           |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - combined, long-term - systemic   |                         | 0.088 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301 |

|                                                                           |                                           |                         |        |
|---------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC10 - Roller application or brushing                                   | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC10 - Roller application or brushing                                   | Worker - combined, long-term - systemic   |                         | 0.463  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - combined, long-term - systemic   |                         | 0.176  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                        | Worker - combined, long-term - systemic   |                         | 0.39   |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - combined, long-term - systemic   |                         | 0.352  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - combined, long-term - systemic   |                         | 0.352  |
| PROC18 - Greasing at high energy conditions                               | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC18 - Greasing at high energy conditions                               | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC18 - Greasing at high energy                                          | Worker - inhalative, short-term           | 39.39 mg/m <sup>3</sup> | 0.402  |

|                                             |                                         |                  |       |
|---------------------------------------------|-----------------------------------------|------------------|-------|
| conditions                                  | - local                                 |                  |       |
| PROC18 - Greasing at high energy conditions | Worker - dermal, long-term - systemic   | 2.742 mg/kg bw/d | 0.065 |
| PROC18 - Greasing at high energy conditions | Worker - dermal, long-term - local      | 0.2 mg/cm2       |       |
| PROC18 - Greasing at high energy conditions | Worker - combined, long-term - systemic |                  | 0.287 |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Metal working fluids                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Main user group</b>                     | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Environmental release category(ies)</b> | ERC8a - Wide dispersive indoor use of processing aids in open systems<br>ERC8d - Wide dispersive outdoor use of processing aids in open systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC10 - Roller application or brushing<br>PROC11 - Non industrial spraying<br>PROC13 - Treatment of articles by dipping and pouring<br>PROC15 - Use as laboratory reagent<br>PROC17 - Lubrication at high energy conditions and in partly open process |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sector(s) of use</b>                    | SU22 - Professional uses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure  |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Process category(ies)       | PROC1 - Use in closed process, no likelihood of exposure          |
| Covers concentrations up to | 100%                                                              |
| Physical form of product    | Liquid                                                            |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently). |

|                                                                                        |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented            |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                          |
| Assumes process temperature up to                                                      | 40 C                                                                            |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of controlled ventilation (5 to 10 air changes per hour)                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                |

|                                   |         |
|-----------------------------------|---------|
| exposure                          |         |
| Covers skin contact area up to    | 480 cm2 |
| Indoor/Outdoor use                | Indoor  |
| Assumes process temperature up to | 40 C    |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Process category(ies) | PROC8b - Transfer of substance or preparation (charging/discharging) from/to |
|-----------------------|------------------------------------------------------------------------------|

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        | vessels/large containers at dedicated facilities                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                         |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                    |
| Physical form of product                                                               | Liquid                                                                                                                                  |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |

|                                                                                       |                                                                                                                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| the worker                                                                            |                                                                                                                                                     |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                        | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                        |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 90% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                |

|                                          |         |
|------------------------------------------|---------|
| /limit releases, dispersion and exposure |         |
| Covers skin contact area up to           | 480 cm2 |
| Indoor/Outdoor use                       | Indoor  |
| Assumes process temperature up to        | 40 C    |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC17 - Lubrication at high energy conditions and in partly open process                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                        |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems  
- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

**Predicted No Effect Concentration (PNEC)**

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in

section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                                    |                        |
|----------------------------------------------------|------------------------|
| <b>Worker - dermal, long-term - systemic</b>       | 63 mg/kg bw/d          |
| <b>Worker - inhalative, long-term - local</b>      | 49 mg/m <sup>3</sup>   |
| <b>Worker - inhalative, long-term - systemic</b>   | 44.4 mg/m <sup>3</sup> |
| <b>Worker - inhalative, short-term - local</b>     | 98 mg/m <sup>3</sup>   |
| <b>Consumer - oral, long-term - systemic</b>       | 2.25 mg/kg bw/d        |
| <b>Consumer - dermal, long-term - systemic</b>     | 22.5 mg/kg bw/d        |
| <b>Consumer - inhalative, long-term - systemic</b> | 7.8 mg/m <sup>3</sup>  |

**Calculation method**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>    | 0.388                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>    | 0.352                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>    | 0.703                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.395                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup>    | 0.603                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d           | < 0.01                            |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - combined, long-term - systemic   |                            | 0.336                             |
| PROC4 - Use in batch and other                                                | Worker - inhalative, long-term            | 14.77 mg/m <sup>3</sup>    | 0.333                             |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| process (synthesis) where opportunity for exposure arises                                                                         | - systemic                                |                         |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.365 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or                                                                                                 | Worker - combined, long-term              |                         | 0.453 |

|                                                                                                                               |                                              |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
| preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                               | - systemic                                   |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| dedicated facilities                                                                                                          |                                           |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - combined, long-term - systemic   |                         | 0.254 |
| PROC10 - Roller application or                                                                                                | Worker - inhalative, long-term            | 7.386 mg/m <sup>3</sup> | 0.166 |

|                                                                           |                                              |                         |        |
|---------------------------------------------------------------------------|----------------------------------------------|-------------------------|--------|
| brushing                                                                  | - systemic                                   |                         |        |
| PROC10 - Roller application or brushing                                   | Worker - inhalative, long-term<br>- local    | 7.386 mg/m <sup>3</sup> | 0.151  |
| PROC10 - Roller application or brushing                                   | Worker - inhalative, short-term<br>- local   | 49.23 mg/m <sup>3</sup> | 0.502  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - systemic        | 5.486 mg/kg bw/d        | 0.131  |
| PROC10 - Roller application or brushing                                   | Worker - dermal, long-term - local           | 0.4 mg/cm <sup>2</sup>  |        |
| PROC10 - Roller application or brushing                                   | Worker - combined, long-term - systemic      |                         | 0.297  |
| PROC11 - Non industrial spraying                                          | Worker - inhalative, long-term<br>- systemic | 10.34 mg/m <sup>3</sup> | 0.233  |
| PROC11 - Non industrial spraying                                          | Worker - inhalative, long-term<br>- local    | 10.34 mg/m <sup>3</sup> | 0.211  |
| PROC11 - Non industrial spraying                                          | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC11 - Non industrial spraying                                          | Worker - dermal, long-term - systemic        | 10.71 mg/kg bw/d        | 0.255  |
| PROC11 - Non industrial spraying                                          | Worker - dermal, long-term - local           | 0.5 mg/cm <sup>2</sup>  |        |
| PROC11 - Non industrial spraying                                          | Worker - combined, long-term<br>- systemic   |                         | 0.488  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term<br>- systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, long-term<br>- local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - inhalative, short-term<br>- local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - dermal, long-term - local           | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring                     | Worker - combined, long-term<br>- systemic   |                         | 0.287  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                        | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - systemic        | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                        | Worker - dermal, long-term - local           | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                        | Worker - combined, long-term<br>- systemic   |                         | 0.39   |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term<br>- systemic | 7.386 mg/m <sup>3</sup> | 0.166  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, long-term<br>- local    | 7.386 mg/m <sup>3</sup> | 0.151  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - inhalative, short-term<br>- local   | 49.23 mg/m <sup>3</sup> | 0.502  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - systemic        | 5.486 mg/kg bw/d        | 0.131  |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - dermal, long-term - local           | 0.4 mg/cm <sup>2</sup>  |        |
| PROC17 - Lubrication at high energy conditions and in partly open process | Worker - combined, long-term<br>- systemic   |                         | 0.297  |

## **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Product Name</b>                   | 2-METHYLPENTANE-2,4-DIOL                                                                  |
| <b>Chemical name</b>                  | HEXYLENE GLYCOL                                                                           |
| <b>Pure substance/mixture</b>         | Substance                                                                                 |
| <b>REACH registration number</b>      | 01-2119539582-35-XXXX                                                                     |
| <b>CAS No</b>                         | 107-41-5                                                                                  |
| <b>EC No (EU Index No)</b>            | 203-489-0                                                                                 |
| <b>Supplier</b>                       | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>GBR |
| <b>Non-Emergency Telephone Number</b> | +44 1274 267300 / +44 1274 267306                                                         |
| <b>E-mail address</b>                 | SDS.EMEA@univarsolutions.com                                                              |

### Section 1 - Title

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                               | Release agents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Main user group</b>                     | Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Environmental release category(ies)</b> | ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Process category(ies)</b>               | PROC1 - Use in closed process, no likelihood of exposure<br>PROC2 - Use in closed, continuous process with occasional controlled exposure<br>PROC3 - Use in closed batch process (synthesis or formulation)<br>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC6 - Calendaring operations<br>PROC7 - Industrial spraying<br>PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities<br>PROC10 - Roller application or brushing<br>PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising<br>PROC15 - Use as laboratory reagent |
| <b>Product Name</b>                        | 2-METHYLPENTANE-2,4-DIOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                      |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |
| Conditions and measures related to                                                     | Wear suitable face shield                                                     |

|                                                                             |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| personal protection, hygiene and health evaluation                          | Wear safety glasses with side shields (or goggles)                                                                                                                                                                                                               |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                              | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                           | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                               |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                          |
| Physical form of product                                                               | Liquid                                                                                                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%           |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs |

|                                   |                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------|
| exposure                          | followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 240 cm <sup>2</sup>                                                                                |
| Indoor/Outdoor use                | Indoor                                                                                             |
| Assumes process temperature up to | 40 C                                                                                               |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC6 - Calendaring operations                                                                                                                                                                                                                                   |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 1500 cm <sup>2</sup>                                                                                                                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                                                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                             |                                                                   |
|-----------------------------|-------------------------------------------------------------------|
| Process category(ies)       | PROC15 - Use as laboratory reagent                                |
| Covers concentrations up to | 100%                                                              |
| Physical form of product    | Liquid                                                            |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently). |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

#### Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

#### Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                    | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|----------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no                        | Worker - combined, long-term              |                            | < 0.01                            |

|                                                                                          |                                              |                         |        |
|------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|--------|
| likelihood of exposure                                                                   | - systemic                                   |                         |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term -<br>systemic     | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - dermal, long-term -<br>local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure            | Worker - combined, long-term<br>- systemic   |                         | 0.117  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term<br>- systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term<br>- local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, short-term<br>- local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term -<br>systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term -<br>local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term<br>- systemic   |                         | 0.336  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term<br>- systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, long-term<br>- local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - inhalative, short-term<br>- local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term -<br>systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - dermal, long-term -<br>local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                           | Worker - combined, long-term<br>- systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term<br>- systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, long-term<br>- local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - inhalative, short-term<br>- local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term -<br>systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - combined, long-term<br>- systemic   |                         | 0.088  |

|                                                                                                                                        |                                              |                         |       |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
| PROC6 - Calendaring operations                                                                                                         | Worker - inhalative, long-term<br>- systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC6 - Calendaring operations                                                                                                         | Worker - inhalative, long-term<br>- local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC6 - Calendaring operations                                                                                                         | Worker - inhalative, short-term<br>- local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC6 - Calendaring operations                                                                                                         | Worker - dermal, long-term -<br>systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC6 - Calendaring operations                                                                                                         | Worker - dermal, long-term -<br>local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC6 - Calendaring operations                                                                                                         | Worker - combined, long-term<br>- systemic   |                         | 0.186 |
| PROC7 - Industrial spraying                                                                                                            | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC7 - Industrial spraying                                                                                                            | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC7 - Industrial spraying                                                                                                            | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC7 - Industrial spraying                                                                                                            | Worker - dermal, long-term -<br>systemic     | 8.572 mg/kg bw/d        | 0.204 |
| PROC7 - Industrial spraying                                                                                                            | Worker - dermal, long-term -<br>local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC7 - Industrial spraying                                                                                                            | Worker - combined, long-term<br>- systemic   |                         | 0.592 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - inhalative, long-term<br>- systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - inhalative, long-term<br>- local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - inhalative, short-term<br>- local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.093 |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - dermal, long-term -<br>systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - dermal, long-term -<br>local        | 0.4 mg/cm <sup>2</sup>  |       |
| PROC10 - Roller application or<br>brushing                                                                                             | Worker - combined, long-term<br>- systemic   |                         | 0.242 |
| PROC14 - Production of preparations                                                                                                    | Worker - inhalative, long-term               | 2.462 mg/m <sup>3</sup> | 0.055 |

|                                                                                                   |                                           |                         |        |
|---------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| or articles by tableting, compression, extrusion, pelettising                                     | - systemic                                |                         |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - systemic     | 0.686 mg/kg bw/d        | 0.016  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>  |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - combined, long-term - systemic   |                         | 0.072  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                | Worker - combined, long-term - systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Release agents  
**Type** Worker  
**Main user group** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC6 - Calendaring operations  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC10 - Roller application or brushing  
 PROC11 - Non industrial spraying  
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising  
 PROC15 - Use as laboratory reagent  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU22 - Professional uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                      |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                 |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented            |
| Covers skin contact area up to                                                        | 240 cm2                                                                         |
| Indoor/Outdoor use                                                                    | Indoor                                                                          |
| Assumes process temperature up to                                                     | 40 C                                                                            |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                      |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |

|                                   |      |
|-----------------------------------|------|
| Assumes process temperature up to | 40 C |
|-----------------------------------|------|

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC6 - Calendaring operations                                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                              |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Process category(ies)                | PROC11 - Non industrial spraying                                                           |
| Covers concentrations up to          | 100%                                                                                       |
| Physical form of product             | Liquid                                                                                     |
| Exposure duration                    | Avoid carrying out activities involving exposure for more than 4 hours                     |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).                          |
| Technical conditions and measures to | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) |

|                                                                                       |                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     |                                                                                                                                                                                                                |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                        | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising                                                   |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

### **Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

**Predicted No Effect Concentration  
(PNEC)**

|                     |               |
|---------------------|---------------|
| Freshwater          | 0.429 mg/l    |
| Freshwater sediment | 1.59 mg/kg dw |

|                                   |                |
|-----------------------------------|----------------|
| <b>Marine water</b>               | 0.0429 mg/l    |
| <b>Marine sediment</b>            | 0.159 mg/kg dw |
| <b>Soil</b>                       | 0.066 mg/kg dw |
| <b>Impact on Sewage Treatment</b> | 20 mg/l        |
| <b>Intermittent release</b>       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                                    |                        |
|----------------------------------------------------|------------------------|
| <b>Worker - dermal, long-term - systemic</b>       | 63 mg/kg bw/d          |
| <b>Worker - inhalative, long-term - local</b>      | 49 mg/m <sup>3</sup>   |
| <b>Worker - inhalative, long-term - systemic</b>   | 44.4 mg/m <sup>3</sup> |
| <b>Worker - inhalative, short-term - local</b>     | 98 mg/m <sup>3</sup>   |
| <b>Consumer - oral, long-term - systemic</b>       | 2.25 mg/kg bw/d        |
| <b>Consumer - dermal, long-term - systemic</b>     | 22.5 mg/kg bw/d        |
| <b>Consumer - inhalative, long-term - systemic</b> | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup>    | 0.603                             |
| PROC3 - Use in closed batch process                                           | Worker - dermal, long-term -              | 0.138 mg/kg bw/d           | < 0.01                            |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| (synthesis or formulation)                                                                                                    | systemic                                  |                         |       |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                | Worker - dermal, long-term - local        | 0.04 mg/cm2             |       |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                | Worker - combined, long-term - systemic   |                         | 0.336 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                      | Worker - combined, long-term - systemic   |                         | 0.254 |
| PROC6 - Calendaring operations                                                                                                | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC6 - Calendaring operations                                                                                                | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC6 - Calendaring operations                                                                                                | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC6 - Calendaring operations                                                                                                | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131 |
| PROC6 - Calendaring operations                                                                                                | Worker - dermal, long-term - local        | 0.4 mg/cm2              |       |
| PROC6 - Calendaring operations                                                                                                | Worker - combined, long-term - systemic   |                         | 0.352 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC10 - Roller application or brushing                                                                                       | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |

|                                                                                                   |                                           |                         |        |
|---------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC10 - Roller application or brushing                                                           | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC10 - Roller application or brushing                                                           | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC10 - Roller application or brushing                                                           | Worker - dermal, long-term - systemic     | 5.486 mg/kg bw/d        | 0.131  |
| PROC10 - Roller application or brushing                                                           | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC10 - Roller application or brushing                                                           | Worker - combined, long-term - systemic   |                         | 0.519  |
| PROC11 - Non industrial spraying                                                                  | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233  |
| PROC11 - Non industrial spraying                                                                  | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211  |
| PROC11 - Non industrial spraying                                                                  | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC11 - Non industrial spraying                                                                  | Worker - dermal, long-term - systemic     | 10.71 mg/kg bw/d        | 0.255  |
| PROC11 - Non industrial spraying                                                                  | Worker - dermal, long-term - local        | 0.5 mg/cm <sup>2</sup>  |        |
| PROC11 - Non industrial spraying                                                                  | Worker - combined, long-term - systemic   |                         | 0.488  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - systemic     | 0.686 mg/kg bw/d        | 0.016  |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>  |        |
| PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising | Worker - combined, long-term - systemic   |                         | 0.238  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                | Worker - combined, long-term - systemic   |                         | 0.39   |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Use in agrochemicals  
**Type** Worker  
**Main user group** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC11 - Non industrial spraying  
 PROC13 - Treatment of articles by dipping and pouring  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU22 - Professional uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                        |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and                    | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |

|                                                                             |                                                                      |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------|
| health evaluation                                                           |                                                                      |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented |
| Covers skin contact area up to                                              | 240 cm2                                                              |
| Indoor/Outdoor use                                                          | Indoor                                                               |
| Assumes process temperature up to                                           | 40 C                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                               |
| Covers concentrations up to                                                            | 5%                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                         |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                      |                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                | PROC13 - Treatment of articles by dipping and pouring                         |
| Covers concentrations up to          | 100%                                                                          |
| Physical form of product             | Liquid                                                                        |
| Use frequency                        | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |

|                                                                                       |                                                                                                                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| control dispersion from source towards the worker                                     | Local exhaust ventilation - efficiency of at least 90%                                                                                              |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                        | 480 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                 |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems**  
**- ERC8d - Wide dispersive outdoor use of processing aids in open systems**

#### **Predicted No Effect Concentration (PNEC)**

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### **Derived No Effect Level (DNEL):**

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

| <b>Calculation method</b>                                                                                                         |                                           | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------|
| Process category(ies)                                                                                                             | Exposure route                            | predicted exposure level                                                                     | Risk characterisation ratio (RCR) |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>                                                                      | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>                                                                      | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>                                                                      | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d                                                                             | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup>                                                                   |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - combined, long-term - systemic   |                                                                                              | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>                                                                      | 0.388                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>                                                                      | 0.352                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>                                                                      | 0.703                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d                                                                             | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>                                                                      |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - combined, long-term - systemic   |                                                                                              | 0.395                             |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup>                                                                      | 0.222                             |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup>                                                                      | 0.201                             |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup>                                                                      | 0.402                             |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d                                                                             | 0.033                             |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>                                                                       |                                   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                                                                                              | 0.254                             |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>                                                                      | 0.388                             |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>                                                                      | 0.352                             |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.453 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - combined, long-term - systemic   |                         | 0.176 |

|                                                          |                                           |                         |        |
|----------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| from/to vessels/large containers at dedicated facilities |                                           |                         |        |
| PROC11 - Non industrial spraying                         | Worker - inhalative, long-term - systemic | 5.909 mg/m <sup>3</sup> | 0.133  |
| PROC11 - Non industrial spraying                         | Worker - inhalative, long-term - local    | 5.909 mg/m <sup>3</sup> | 0.121  |
| PROC11 - Non industrial spraying                         | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC11 - Non industrial spraying                         | Worker - dermal, long-term - systemic     | 2.143 mg/kg bw/d        | 0.051  |
| PROC11 - Non industrial spraying                         | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>  |        |
| PROC11 - Non industrial spraying                         | Worker - combined, long-term - systemic   |                         | 0.184  |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring    | Worker - combined, long-term - systemic   |                         | 0.287  |
| PROC15 - Use as laboratory reagent                       | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                       | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                       | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                       | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                       | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                       | Worker - combined, long-term - systemic   |                         | 0.39   |

## **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Fuels  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC6b - Industrial use of reactive processing aids  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC15 - Use as laboratory reagent  
 PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6b - Industrial use of reactive processing aids

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                                                                                               |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                      |
| Covers concentrations up to                                                            | 100%                                                                                                                                                          |
| Physical form of product                                                               | Liquid                                                                                                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                 |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                               |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs |

|                                   |                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------|
| exposure                          | followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 240 cm <sup>2</sup>                                                                                |
| Indoor/Outdoor use                | Indoor                                                                                             |
| Assumes process temperature up to | 40 C                                                                                               |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |

|                                   |      |
|-----------------------------------|------|
| Assumes process temperature up to | 40 C |
|-----------------------------------|------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)                                                                                                                                                                                  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Process category(ies) | PROC16 - Using material as fuel sources, limited exposure to unburned product to be |
|-----------------------|-------------------------------------------------------------------------------------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        | expected                                                                                                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids**

#### Predicted No Effect Concentration (PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

#### Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                    | Exposure route                            | predicted exposure level | Risk characterisation ratio (RCR) |
|----------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>  | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>  | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>  | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal, long-term -              | 0.034 mg/kg bw/d         | < 0.01                            |

|                                                                                                                                   |                                           |                         |        |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| likelihood of exposure                                                                                                            | systemic                                  |                         |        |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - dermal, long-term - local        | 0.00992 mg/cm2          |        |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - combined, long-term - systemic   |                         | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d        | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - combined, long-term - systemic   |                         | 0.117  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - local        | 0.04 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |        |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.176  |
| PROC8b - Transfer of substance or preparation (charging/discharging)                                                              | Worker - inhalative, long-term - systemic | 10.34 mg/m <sup>3</sup> | 0.233  |

|                                                                                                                               |                                           |                         |        |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| from/to vessels/large containers at dedicated facilities                                                                      |                                           |                         |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 10.34 mg/m <sup>3</sup> | 0.211  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.298  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 13.71 mg/kg bw/d        | 0.326  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 1 mg/cm <sup>2</sup>    |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.715  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - systemic     | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - local        | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - combined, long-term - systemic   |                         | 0.39   |
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected                                  | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |

|                                                                                              |                                         |                         |        |
|----------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------|--------|
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected | Worker - inhalative, long-term - local  | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected | Worker - inhalative, short-term - local | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected | Worker - dermal, long-term - systemic   | 0.068 mg/kg bw/d        | < 0.01 |
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected | Worker - dermal, long-term - local      | 0.02 mg/cm <sup>2</sup> |        |
| PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected | Worker - combined, long-term - systemic |                         | 0.113  |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR

**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306

**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Functional fluids  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC7 - Industrial use of substances in closed systems  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC15 - Use as laboratory reagent  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC7 - Industrial use of substances in closed systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                 |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                        |
| Covers concentrations up to                                                            | 100%                                                                            |
| Physical form of product                                                               | Liquid                                                                          |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).               |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)   |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles) |
| Organisational measures to prevent                                                     | Assumes a good basic standard of occupational hygiene is implemented            |

|                                          |                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /limit releases, dispersion and exposure | Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to           | 240 cm2                                                                                                                                                                                  |
| Indoor/Outdoor use                       | Indoor                                                                                                                                                                                   |
| Assumes process temperature up to        | 40 C                                                                                                                                                                                     |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |

|                                   |      |
|-----------------------------------|------|
| Assumes process temperature up to | 40 C |
|-----------------------------------|------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                         |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95%                                                   |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Process category(ies) | PROC8a - Transfer of substance or preparation (charging/discharging) from/to |
|-----------------------|------------------------------------------------------------------------------|

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        | vessels/large containers at non dedicated facilities                                                                                                                                                                                                             |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

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|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                                                                                                                                          |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                             |                                                                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| Process category(ies)       | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| Covers concentrations up to | 100%                                                                                                            |
| Physical form of product    | Liquid                                                                                                          |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### **Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems**

**Predicted No Effect Concentration**

(PNEC)

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

Remarks

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.274 mg/kg bw/d           | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup>    |                                   |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - combined, long-term - systemic   |                            | 0.117                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup>    | 0.333                             |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup>    | 0.301                             |

|                                                                                                                                   |                                           |                         |        |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - systemic     | 0.138 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - local        | 0.04 mg/cm <sup>2</sup> |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - combined, long-term - systemic   |                         | 0.336  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.88   |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.421  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065  |
| PROC8a - Transfer of substance or                                                                                                 | Worker - dermal, long-term -              | 0.2 mg/cm <sup>2</sup>  |        |

|                                                                                                                                            |                                              |                         |       |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
| preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities                                      | local                                        |                         |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, long-term<br>- systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, long-term<br>- local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - inhalative, short-term<br>- local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - dermal, long-term -<br>local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at non<br>dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.176 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at<br>dedicated facilities     | Worker - inhalative, long-term<br>- systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or<br>preparation (charging/discharging)<br>from/to vessels/large containers at                             | Worker - inhalative, long-term<br>- local    | 1.231 mg/m <sup>3</sup> | 0.025 |

|                                                                                                                               |                                           |                         |       |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| dedicated facilities                                                                                                          |                                           |                         |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - systemic | 1.231 mg/m <sup>3</sup> | 0.028 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 1.231 mg/m <sup>3</sup> | 0.025 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 4.924 mg/m <sup>3</sup> | 0.05  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.093 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - systemic | 2.462 mg/m <sup>3</sup> | 0.055 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term - local    | 2.462 mg/m <sup>3</sup> | 0.05  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term - local   | 9.848 mg/m <sup>3</sup> | 0.1   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - dermal, long-term - local        | 0.2 mg/cm <sup>2</sup>  |       |
| PROC9 - Transfer of substance or                                                                                              | Worker - combined, long-term              |                         | 0.88  |

|                                                                                                                 |                                              |                         |        |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|--------|
| preparation into small containers (dedicated filling line, including weighing)                                  | - systemic                                   |                         |        |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term<br>- systemic | 2.462 mg/m <sup>3</sup> | 0.055  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term<br>- local    | 2.462 mg/m <sup>3</sup> | 0.05   |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, short-term<br>- local   | 9.848 mg/m <sup>3</sup> | 0.1    |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - systemic        | 1.372 mg/kg bw/d        | 0.033  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |        |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - combined, long-term<br>- systemic   |                         | 0.88   |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                                                                              | Worker - dermal, long-term - systemic        | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                              | Worker - dermal, long-term - local           | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                              | Worker - combined, long-term<br>- systemic   |                         | 0.39   |

## **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** road and construction products.  
**Type** Worker  
**Main user group** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
**Environmental release category(ies)** ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix  
**Process category(ies)** PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)  
 PROC7 - Industrial spraying  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC10 - Roller application or brushing  
 PROC11 - Non industrial spraying  
 PROC13 - Treatment of articles by dipping and pouring  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU22 - Professional uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                                                                                         |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)     |
| Covers concentrations up to                                                            | 100%                                                                                                                                    |
| Physical form of product                                                               | Liquid                                                                                                                                  |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |

|                                                                                       |                                                                                                                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                        | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                    | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                     | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC7 - Industrial spraying                                                                                                                          |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                               |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                               |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                 |

|                                                                                        |                                                                                                                                                      |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                 |
| Physical form of product                                                               | Liquid                                                                                                                                               |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 1 hour                                                                                |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                    |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%  |
| Organisational measures to prevent /limit releases, dispersion and                     | Assumes a good basic standard of occupational hygiene is implemented                                                                                 |

|                                   |         |
|-----------------------------------|---------|
| exposure                          |         |
| Covers skin contact area up to    | 960 cm2 |
| Indoor/Outdoor use                | Indoor  |
| Assumes process temperature up to | 40 C    |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                       |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                     |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                             |
| Covers concentrations up to                                                            | 1%                                                                                                                                                  |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 960 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                             |                                  |
|-----------------------------|----------------------------------|
| Process category(ies)       | PROC11 - Non industrial spraying |
| Covers concentrations up to | 25%                              |

|                                                                                        |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical form of product                                                               | Liquid                                                                                                                                                                                                         |
| Exposure duration                                                                      | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                         |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                              |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                  |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80%<br>Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                           |
| Covers skin contact area up to                                                         | 1500 cm2                                                                                                                                                                                                       |
| Indoor/Outdoor use                                                                     | Outdoor                                                                                                                                                                                                        |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                           |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 90%             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 480 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

|                                                                                        |                                                                                                                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                  |
| Covers concentrations up to                                                            | 100%                                                                                                                                                |
| Physical form of product                                                               | Liquid                                                                                                                                              |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                   |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 80% |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented                                                                                |
| Covers skin contact area up to                                                         | 240 cm2                                                                                                                                             |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                              |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix**

**Predicted No Effect Concentration  
(PNEC)**

|                                   |                |
|-----------------------------------|----------------|
| <b>Freshwater</b>                 | 0.429 mg/l     |
| <b>Freshwater sediment</b>        | 1.59 mg/kg dw  |
| <b>Marine water</b>               | 0.0429 mg/l    |
| <b>Marine sediment</b>            | 0.159 mg/kg dw |
| <b>Soil</b>                       | 0.066 mg/kg dw |
| <b>Impact on Sewage Treatment</b> | 20 mg/l        |
| <b>Intermittent release</b>       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                                    |                        |
|----------------------------------------------------|------------------------|
| <b>Worker - dermal, long-term - systemic</b>       | 63 mg/kg bw/d          |
| <b>Worker - inhalative, long-term - local</b>      | 49 mg/m <sup>3</sup>   |
| <b>Worker - inhalative, long-term - systemic</b>   | 44.4 mg/m <sup>3</sup> |
| <b>Worker - inhalative, short-term - local</b>     | 98 mg/m <sup>3</sup>   |
| <b>Consumer - oral, long-term - systemic</b>       | 2.25 mg/kg bw/d        |
| <b>Consumer - dermal, long-term - systemic</b>     | 22.5 mg/kg bw/d        |
| <b>Consumer - inhalative, long-term - systemic</b> | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                                                                               | Exposure route                            | predicted exposure level | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------|
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup>  | 0.222                             |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup>  | 0.201                             |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup>  | 0.402                             |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d         | 0.065                             |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>   |                                   |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - combined, long-term - systemic   |                          | 0.287                             |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>  | 0.388                             |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>  | 0.352                             |
| PROC7 - Industrial spraying                                                                                                         | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>  | 0.703                             |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - systemic     | 8.572 mg/kg bw/d         | 0.204                             |
| PROC7 - Industrial spraying                                                                                                         | Worker - dermal, long-term - local        | 0.4 mg/cm <sup>2</sup>   |                                   |
| PROC7 - Industrial spraying                                                                                                         | Worker - combined, long-term              |                          | 0.592                             |

|                                                                                                                                   |                                              |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------|-------|
|                                                                                                                                   | - systemic                                   |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- systemic | 17.23 mg/m <sup>3</sup> | 0.388 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local    | 17.23 mg/m <sup>3</sup> | 0.352 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic        | 8.572 mg/kg bw/d        | 0.204 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local           | 0.4 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.592 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- systemic | 10.34 mg/m <sup>3</sup> | 0.233 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local    | 10.34 mg/m <sup>3</sup> | 0.211 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic        | 2.742 mg/kg bw/d        | 0.065 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local           | 0.2 mg/cm <sup>2</sup>  |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term<br>- systemic   |                         | 0.298 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- systemic | 3.447 mg/m <sup>3</sup> | 0.078 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local    | 3.447 mg/m <sup>3</sup> | 0.07  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local   | 68.93 mg/m <sup>3</sup> | 0.703 |
| PROC8a - Transfer of substance or                                                                                                 | Worker - dermal, long-term -                 | 2.742 mg/kg bw/d        | 0.065 |

|                                                                                                                                   |                                           |                         |       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|-------|
| preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                   | systemic                                  |                         |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.143 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1   |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - systemic     | 2.742 mg/kg bw/d        | 0.065 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - combined, long-term - systemic   |                         | 0.176 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, long-term - systemic | 9.848 mg/m <sup>3</sup> | 0.222 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, long-term - local    | 9.848 mg/m <sup>3</sup> | 0.201 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, short-term - local   | 39.39 mg/m <sup>3</sup> | 0.402 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - dermal, long-term - systemic     | 1.372 mg/kg bw/d        | 0.033 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - dermal, long-term - local        | 0.2 mg/cm2              |       |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - combined, long-term - systemic   |                         | 0.254 |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, long-term - systemic | 12.31 mg/m <sup>3</sup> | 0.277 |
| PROC10 - Roller application or                                                                                                    | Worker - inhalative, long-term            | 12.31 mg/m <sup>3</sup> | 0.251 |

|                                                       |                                            |                         |        |
|-------------------------------------------------------|--------------------------------------------|-------------------------|--------|
| brushing                                              | - local                                    |                         |        |
| PROC10 - Roller application or brushing               | Worker - inhalative, short-term<br>- local | 49.23 mg/m <sup>3</sup> | 0.502  |
| PROC10 - Roller application or brushing               | Worker - dermal, long-term - systemic      | 0.549 mg/kg bw/d        | 0.013  |
| PROC10 - Roller application or brushing               | Worker - dermal, long-term - local         | 0.04 mg/cm <sup>2</sup> |        |
| PROC10 - Roller application or brushing               | Worker - combined, long-term - systemic    |                         | 0.29   |
| PROC11 - Non industrial spraying                      | Worker - inhalative, long-term - systemic  | 6.204 mg/m <sup>3</sup> | 0.14   |
| PROC11 - Non industrial spraying                      | Worker - inhalative, long-term - local     | 6.204 mg/m <sup>3</sup> | 0.127  |
| PROC11 - Non industrial spraying                      | Worker - inhalative, short-term - local    | 41.36 mg/m <sup>3</sup> | 0.422  |
| PROC11 - Non industrial spraying                      | Worker - dermal, long-term - systemic      | 12.85 mg/kg bw/d        | 0.306  |
| PROC11 - Non industrial spraying                      | Worker - dermal, long-term - local         | 0.06 mg/cm <sup>2</sup> |        |
| PROC11 - Non industrial spraying                      | Worker - combined, long-term - systemic    |                         | 0.446  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - systemic  | 9.848 mg/m <sup>3</sup> | 0.222  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, long-term - local     | 9.848 mg/m <sup>3</sup> | 0.201  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - inhalative, short-term - local    | 39.39 mg/m <sup>3</sup> | 0.402  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - systemic      | 2.742 mg/kg bw/d        | 0.065  |
| PROC13 - Treatment of articles by dipping and pouring | Worker - dermal, long-term - local         | 0.4 mg/cm <sup>2</sup>  |        |
| PROC13 - Treatment of articles by dipping and pouring | Worker - combined, long-term - systemic    |                         | 0.287  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - systemic  | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, long-term - local     | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC15 - Use as laboratory reagent                    | Worker - inhalative, short-term - local    | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - systemic      | 0.068 mg/kg bw/d        | < 0.01 |
| PROC15 - Use as laboratory reagent                    | Worker - dermal, long-term - local         | 0.02 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                    | Worker - combined, long-term - systemic    |                         | 0.39   |

## Section 4 - Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR

**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306

**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Cosmetics, personal care products  
**Type** Consumer  
**Main user group** Consumer uses: Private households (= general public = consumers)  
**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems  
**Product category(ies)** PC39 - Cosmetics, personal care products  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

#### Control of consumer exposure

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| Product categories [PC]     | PC39 - Cosmetics, personal care products                                              |
| Covers concentrations up to | 100%                                                                                  |
| Physical form of product    | Liquid                                                                                |
| Use frequency               | Covers daily exposures up to 8 hours (unless stated differently).<br>1 events per day |
| Indoor/Outdoor use          | Indoor                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems  
 - ERC8d - Wide dispersive outdoor use of processing aids in open systems

#### Predicted No Effect Concentration (PNEC)

|                     |               |
|---------------------|---------------|
| Freshwater          | 0.429 mg/l    |
| Freshwater sediment | 1.59 mg/kg dw |

|                            |                |
|----------------------------|----------------|
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method** The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

**Remarks** Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

#### Section 4 - Guidance to check compliance with the exposure scenario

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Chemical name** HEXYLENE GLYCOL  
**Pure substance/mixture** Substance  
**REACH registration number** 01-2119539582-35-XXXX  
**CAS No** 107-41-5  
**EC No (EU Index No)** 203-489-0  
**Supplier** Univar Solutions UK Ltd  
 Aquarius House  
 6 Mid Point Business Park  
 Bradford  
 GBR  
  
**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306  
  
**E-mail address** SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Formulation Perfumes, fragrances  
**Type** Worker  
**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Environmental release category(ies)** ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)  
**Process category(ies)** PROC1 - Use in closed process, no likelihood of exposure  
 PROC2 - Use in closed, continuous process with occasional controlled exposure  
 PROC3 - Use in closed batch process (synthesis or formulation)  
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises  
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
 PROC15 - Use as laboratory reagent  
  
**Product Name** 2-METHYLPENTANE-2,4-DIOL  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### Conditions and measures related to external treatment of waste for disposal

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| Disposal | Dispose of waste product or used containers according to local regulations |
|----------|----------------------------------------------------------------------------|

| Control of worker exposure                                                             |                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                      |
| Covers concentrations up to                                                            | 100%                                                                          |
| Physical form of product                                                               | Liquid                                                                        |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).             |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour) |
| Conditions and measures related to                                                     | Wear suitable face shield                                                     |

|                                                                             |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| personal protection, hygiene and health evaluation                          | Wear safety glasses with side shields (or goggles)                                                                                                                                                                                                               |
| Organisational measures to prevent /limit releases, dispersion and exposure | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                              | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                          | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                           | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 480 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                   |
| Title                                                                                  | Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)                                                                                                                                                                                    |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                        |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                   |
| Physical form of product                                                               | Liquid                                                                                                                                                                 |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                      |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                             |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed |

|                                   |                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------|
|                                   | Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to    | 480 cm <sup>2</sup>                                                                    |
| Indoor/Outdoor use                | Indoor                                                                                 |
| Assumes process temperature up to | 40 C                                                                                   |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a basic standard of general ventilation (1 to 3 air changes per hour)<br>Local exhaust ventilation - efficiency of at least 95%                                                                                                                          |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                    |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 960 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

|                                                                                        |                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                               |
| Covers concentrations up to                                                            | 100%                                                                                                                                                                                                                                                             |
| Physical form of product                                                               | Liquid                                                                                                                                                                                                                                                           |
| Use frequency                                                                          | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                |
| Technical conditions and measures to control dispersion from source towards the worker | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear suitable face shield<br>Wear safety glasses with side shields (or goggles)<br>Wear suitable gloves tested to EN 374 Efficiency of at least 90%                                                                                                              |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Assumes a good basic standard of occupational hygiene is implemented<br>Supervision in place to check that the RMMs in place are being used correctly and OCs followed<br>Ensure procedures and training for emergency decontamination and disposal are in place |
| Covers skin contact area up to                                                         | 240 cm <sup>2</sup>                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Indoor                                                                                                                                                                                                                                                           |
| Assumes process temperature up to                                                      | 40 C                                                                                                                                                                                                                                                             |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)**

**Predicted No Effect Concentration (PNEC)**

|                            |                |
|----------------------------|----------------|
| Freshwater                 | 0.429 mg/l     |
| Freshwater sediment        | 1.59 mg/kg dw  |
| Marine water               | 0.0429 mg/l    |
| Marine sediment            | 0.159 mg/kg dw |
| Soil                       | 0.066 mg/kg dw |
| Impact on Sewage Treatment | 20 mg/l        |
| Intermittent release       | 4.29 mg/l      |

**Remarks** Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

**Derived No Effect Level (DNEL):**

|                                             |                        |
|---------------------------------------------|------------------------|
| Worker - dermal, long-term - systemic       | 63 mg/kg bw/d          |
| Worker - inhalative, long-term - local      | 49 mg/m <sup>3</sup>   |
| Worker - inhalative, long-term - systemic   | 44.4 mg/m <sup>3</sup> |
| Worker - inhalative, short-term - local     | 98 mg/m <sup>3</sup>   |
| Consumer - oral, long-term - systemic       | 2.25 mg/kg bw/d        |
| Consumer - dermal, long-term - systemic     | 22.5 mg/kg bw/d        |
| Consumer - inhalative, long-term - systemic | 7.8 mg/m <sup>3</sup>  |

**Calculation method**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

| Process category(ies)                                                         | Exposure route                            | predicted exposure level   | Risk characterisation ratio (RCR) |
|-------------------------------------------------------------------------------|-------------------------------------------|----------------------------|-----------------------------------|
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - systemic | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, long-term - local    | 0.049 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local   | 0.197 mg/m <sup>3</sup>    | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01                            |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |                                   |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - combined, long-term - systemic   |                            | < 0.01                            |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup>    | 0.111                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup>    | 0.1                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup>    | 0.201                             |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal, long-term - systemic     | 0.137 mg/kg bw/d           | < 0.01                            |

|                                                                                                                                   |                                           |                         |        |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------|--------|
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - dermal, long-term - local        | 0.02 mg/cm2             |        |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - combined, long-term - systemic   |                         | 0.114  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - systemic | 14.77 mg/m <sup>3</sup> | 0.333  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term - local    | 14.77 mg/m <sup>3</sup> | 0.301  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term - local   | 59.08 mg/m <sup>3</sup> | 0.603  |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - systemic     | 0.069 mg/kg bw/d        | < 0.01 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - dermal, long-term - local        | 0.02 mg/cm2             |        |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - combined, long-term - systemic   |                         | 0.334  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup> | 0.388  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup> | 0.352  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup> | 0.703  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - systemic     | 0.686 mg/kg bw/d        | 0.016  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - dermal, long-term - local        | 0.1 mg/cm2              |        |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - combined, long-term - systemic   |                         | 0.404  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - systemic | 4.924 mg/m <sup>3</sup> | 0.111  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term - local    | 4.924 mg/m <sup>3</sup> | 0.1    |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term - local   | 19.69 mg/m <sup>3</sup> | 0.201  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - systemic     | 1.371 mg/kg bw/d        | 0.033  |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal, long-term - local        | 0.1 mg/cm2              |        |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - combined, long-term - systemic   |                         | 0.144  |
| PROC8b - Transfer of substance or                                                                                                 | Worker - inhalative, long-term            | 17.23 mg/m <sup>3</sup> | 0.388  |

|                                                                                                                               |                                           |                            |        |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------|--------|
| preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                   | - systemic                                |                            |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>    | 0.352  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>    | 0.703  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - systemic     | 1.371 mg/kg bw/d           | 0.033  |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - dermal, long-term - local        | 0.1 mg/cm <sup>2</sup>     |        |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - combined, long-term - systemic   |                            | 0.421  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - systemic | 17.23 mg/m <sup>3</sup>    | 0.388  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, long-term - local    | 17.23 mg/m <sup>3</sup>    | 0.352  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - inhalative, short-term - local   | 68.93 mg/m <sup>3</sup>    | 0.703  |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - systemic     | 0.034 mg/kg bw/d           | < 0.01 |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - dermal, long-term - local        | 0.00992 mg/cm <sup>2</sup> |        |
| PROC15 - Use as laboratory reagent                                                                                            | Worker - combined, long-term - systemic   |                            | 0.389  |

#### **Section 4 - Guidance to check compliance with the exposure scenario**

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.