

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

Revision date 24-Oct-2025

Revision Number 1

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

### 1.1. Product identifier

|                          |                              |
|--------------------------|------------------------------|
| Product Code(s)          | 127281                       |
| Safety data sheet number | 127281                       |
| Product Name             | HYDROCHLORIC ACID HG 24% SOL |
| Index No                 | 017-002-00-2                 |
| EC Number                | 231-595-7                    |
| CAS No                   | 7647-01-0                    |
| Pure substance/mixture   | Substance                    |
| Molecular weight         | 38.46 g/mol                  |

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

|                      |                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended use      | Chemical intermediate<br>Washing and cleaning agent<br>pH control<br>Laboratory chemicals<br>Metal pickling<br>Industrial use<br>For further information, see attached Exposure Scenario |
| Uses advised against | Any use involving aerosol formation, vapour release (>10 ppm) or risks of splashes to eyes / skin where workers are exposed without respiratory, eye or skin protection                  |

### 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**

|                                                  |                                    |
|--------------------------------------------------|------------------------------------|
| Corrosive to metals                              | Category 1 - (H290)                |
| Skin corrosion/irritation                        | Category 1 Sub-category B - (H314) |
| Serious eye damage/eye irritation                | Category 1 - (H318)                |
| Specific target organ toxicity — single exposure | Category 3 - (H335)                |

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

Danger

**Hazard statements**

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

H290 - May be corrosive to metals

**Precautionary statements**

P260 - Do not breathe vapours/spray

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

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]

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

P310 - Immediately call a POISON CENTER or doctor

**Additional information**

Acquisition, possession or use by the general public is restricted.

**2.3. Other hazards**

No information available.

**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) |
|-------------------------------------|----------|-----------------------------|------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------|----------------------|
| HYDROCHLORIC ACID ...%<br>7647-01-0 | 24%      | 231-595-7<br>(017-002-00-2) | -                            | Met. Corr. 1 (H290)<br>Skin Corr. 1A (H314)<br>Eye Dam. 1 (H318)<br>STOT SE 3 (H335) | Skin Corr. 1A ::<br>C>=25%<br>Skin Corr. 1B ::<br>10%<=C<25%<br>STOT SE 3<br>(H335)::<br>C>=10%<br>Eye Dam. 1 ::<br>C>=1% | -        | -                    |

|  |  |  |  |  |                            |  |  |
|--|--|--|--|--|----------------------------|--|--|
|  |  |  |  |  | Met. Corr. 1 ::<br>C>=0.1% |  |  |
|--|--|--|--|--|----------------------------|--|--|

**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>                     | Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Inhalation</b>                         | Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical attention. |
| <b>Eye contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.                                                                                                                                                                                                               |
| <b>Skin contact</b>                       | Chemical burns must be treated promptly by a physician. Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Apply a sterile dressing. Get immediate medical attention.                                                                                                                                                                                                                                                       |
| <b>Ingestion</b>                          | Immediately rinse mouth and drink plenty of water (200-300 ml). Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical attention.                                                                                                                                                                                                                                                                                                   |
| <b>Self-protection of the first aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).                                                                                                                                        |

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

|                   |                                                                 |
|-------------------|-----------------------------------------------------------------|
| <b>Symptoms</b>   | Adverse symptoms may include:.                                  |
| <b>Inhalation</b> | Sore throat. Coughing and/or wheezing. Difficulty in breathing. |
| <b>Eyes</b>       | Burning sensation. Causes serious eye damage.                   |
| <b>Dermal</b>     | Burning sensation. Blistering. Causes severe burns.             |

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

|                        |                                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Note to doctors</b> | Treat with a corticosteroid metered dose aerosol depending on the amount inhaled to prevent pulmonary oedema. NOTE! Effects may be delayed. Keep affected person under observation. |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

|                                     |                                                                                                         |
|-------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b> | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| <b>Large Fire</b>                   | 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** Product itself does not burn. Contact with metals may evolve flammable hydrogen gas. Exothermic reaction with water. Containers can burst violently when heated, due to excess pressure build-up. Thermal decomposition can lead to release of toxic and corrosive gases/vapours.

**Hazardous combustion products** Hydrogen chloride. Chlorine. Hydrogen.

### **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. 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.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Provide adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material.

**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** Avoid release to the environment. Keep out of drains, sewers, ditches and waterways. Local authorities should be advised if significant spillages cannot be contained.

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

**Methods for containment** Prevent further leakage or spillage if safe to do so. Neutralise with soda ash (sodium carbonate) or lime over area of spill. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

**Methods for cleaning up** Flush area with flooding quantities of water.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations. Observe good chemical hygiene practices.

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

**Reference to other sections** See section 8 for more information. See section 13 for more information.

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

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

**Advice on safe handling** Avoid contact with eyes, skin and clothing. Avoid breathing vapours or mists. Ensure adequate ventilation. Use exhaust ventilation to keep airborne concentrations below exposure limits. Ensure that eyewash stations and safety showers are close to the workstation location. DO NOT add water to acid. Always add acid TO water. Dissolution and neutralisation reactions are highly exothermic.

**General hygiene considerations** Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or

smoke when using the product. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

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

### Storage Conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat. Keep/store only in original container. Store away from incompatible materials. Strong oxidising agents. Strong bases. Sodium hypochlorite. Metals. Vinyl acetate monomer (VAM).

### Packaging materials

Suitable container/equipment material: High density polyethylene (HDPE). Low density polyethylene (LDPE). Polyester with fibreglass reinforcement. Glass. Unsuitable container/equipment material. Paper/Fibreboard. Carbon Steel. Galvanized steel. Aluminium. Tinplate.

## 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                                                                     |
|-------------------------------------|------------------------------------------------------------------------------------|
| HYDROCHLORIC ACID ...%<br>7647-01-0 | TWA: 1 ppm<br>TWA: 2 mg/m <sup>3</sup><br>STEL: 5 ppm<br>STEL: 8 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                                                  |
|-------------------------------------|------|--------|-------------------------------------------------------------|
| HYDROCHLORIC ACID ...%<br>7647-01-0 |      |        | 8 mg/m <sup>3</sup> [5] [6]<br>15 mg/m <sup>3</sup> [5] [7] |

[5] Local health effects.

[6] Long term.

[7] Short term.

**Derived No Effect Level (DNEL) - General Public** No information available.

| Chemical name                       | Oral | Dermal | Inhalation                                                  |
|-------------------------------------|------|--------|-------------------------------------------------------------|
| HYDROCHLORIC ACID ...%<br>7647-01-0 |      |        | 8 mg/m <sup>3</sup> [5] [6]<br>15 mg/m <sup>3</sup> [5] [7] |

#### Predicted No Effect Concentration (PNEC)

| Chemical name     | Freshwater | Freshwater<br>(intermittent release) | Marine water | Marine water<br>(intermittent release) | Air |
|-------------------|------------|--------------------------------------|--------------|----------------------------------------|-----|
| HYDROCHLORIC ACID | 36 µg/l    | 45 µg/l                              | 36 µg/l      |                                        |     |

| Chemical name     | Freshwater | Freshwater<br>(intermittent release) | Marine water | Marine water<br>(intermittent release) | Air |
|-------------------|------------|--------------------------------------|--------------|----------------------------------------|-----|
| ...%<br>7647-01-0 |            |                                      |              |                                        |     |

| Chemical name                          | Freshwater<br>sediment | Marine sediment | Sewage treatment | Soil    | Food chain |
|----------------------------------------|------------------------|-----------------|------------------|---------|------------|
| HYDROCHLORIC ACID<br>...%<br>7647-01-0 |                        |                 |                  | 36 µg/l |            |

## 8.2. Exposure controls

### Engineering controls

Ensure adequate ventilation. Ensure that eyewash stations and safety showers are close to the workstation location. Use engineering controls to keep exposures below the OEL or DNEL.

### Personal protective equipment

#### Eye/face protection

Use eye protection according to EN 166. Tight sealing safety goggles. Face protection shield.

#### Hand protection

Wear protective gloves. Use gauntlet type rubber gloves. 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. Examples of acceptable glove barrier materials include: Polychloroprene. Nitrile rubber. Butyl rubber. Polyvinyl chloride (PVC). Unsuitable material: Leather.

| Gloves               |                          |                 |                    |
|----------------------|--------------------------|-----------------|--------------------|
| Duration of contact  | PPE - Glove material     | Glove thickness | Break through time |
| Long term (repeated) | Polychloroprene.         | 0.5 mm          | = 8 hours          |
| Long term (repeated) | Nitrile rubber           | 0.35 mm         | = 8 hours          |
| Long term (repeated) | Butyl rubber             | 0.5 mm          | = 8 hours          |
| Long term (repeated) | Polyvinyl chloride (PVC) | 0.5 mm          | = 8 hours          |

#### Skin and body protection

Acid-proof protective clothing. EN14605.

#### Respiratory protection

In case of inadequate ventilation wear respiratory protection. Respirator fitted with an acid vapour filter. Where an air-purifying respirator is suitable, use EN141 or EN405, type E.  
Recommended filter type: Inorganic gases and vapours filter conforming to EN 14387.

#### General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using the product. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

#### Environmental exposure controls

Avoid release to the environment. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

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

|                 |                           |
|-----------------|---------------------------|
| Physical state  | Liquid                    |
| Appearance      | Fuming liquid             |
| Colour          | Colourless to pale yellow |
| Odour           | Acidic.                   |
| Odour threshold | 1 - 5 ppm                 |

| <u>Property</u>                         | <u>Values</u>                                              | <u>Remarks • Method</u>   |
|-----------------------------------------|------------------------------------------------------------|---------------------------|
| Melting point / freezing point          | ~ - 55 °C                                                  | No information available. |
| Initial boiling point and boiling range | 108 °C                                                     | No information available. |
| Flammability                            |                                                            | Not applicable.           |
| Flammability Limit in Air               |                                                            | Not applicable.           |
| Upper flammability or explosive limits  |                                                            |                           |
| Lower flammability or explosive limits  |                                                            |                           |
| Flash point                             |                                                            | Not applicable.           |
| Autoignition temperature                |                                                            | Not applicable.           |
| Decomposition temperature               |                                                            | No information available. |
| pH                                      | 1.0                                                        | No information available. |
| pH (as aqueous solution)                |                                                            | No information available. |
| Kinematic viscosity                     |                                                            | No information available. |
| Dynamic viscosity                       |                                                            | No information available. |
| Water solubility                        | Soluble in water                                           | No information available. |
| Solubility(ies)                         | soluble in Ether Alcohol Acetic acid<br>Benzene Chloroform | No information available. |
| Partition coefficient                   |                                                            | Not applicable.           |
| Vapour pressure                         | 11 mm Hg                                                   | No information available. |
| Relative density                        | >1.05                                                      | @ 15.5 °C.                |
| Bulk density                            |                                                            | No information available  |
| Liquid Density                          | .                                                          | No information available  |
| Relative vapour density                 |                                                            | Not applicable.           |
| Particle characteristics                |                                                            | Not applicable.           |
| Particle Size                           | .                                                          |                           |
| Particle Size Distribution              | .                                                          |                           |
| Explosive properties                    | No information available                                   |                           |
| Oxidising properties                    | No information available                                   |                           |
| <b>9.2. Other information</b>           |                                                            |                           |
| Molecular weight                        | 38.46 g/mol                                                |                           |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

**Reactivity** May be corrosive to metals. Reacts with alkalis. Strong oxidising agents. Exothermic reaction with water.

### 10.2. Chemical stability

**Stability** Stable under normal conditions.

### Explosion data

**Sensitivity to mechanical impact** None.

**Sensitivity to static discharge** None.

### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions** In contact with some metals can generate hydrogen gas, which can form explosive mixtures with air. Can react violently if in contact with oxidising agents, liberating chlorine. Exothermic reaction with alkalis.

### 10.4. Conditions to avoid

**Conditions to avoid** Aerosol or mist formation.

### 10.5. Incompatible materials

**Incompatible materials** Strong oxidising agents. Strong bases. Sodium hypochlorite. Metals. Vinyl acetate monomer (VAM).

**10.6. Hazardous decomposition products**

**Hazardous decomposition products** Thermal decomposition may release: Hydrogen chloride. Chlorine. Hydrogen.

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

|                     |                                                                       |
|---------------------|-----------------------------------------------------------------------|
| <b>Inhalation</b>   | May cause irritation of respiratory tract.                            |
| <b>Eye contact</b>  | Causes serious eye damage.                                            |
| <b>Skin contact</b> | Causes severe burns.                                                  |
| <b>Ingestion</b>    | Ingestion causes burns of the upper digestive and respiratory tracts. |

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

**Symptoms** Burning. Redness. May cause blindness. Coughing and/ or wheezing.

**Acute toxicity****Numerical measures of toxicity**

Based on available data, the classification criteria are not met

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

**Skin corrosion/irritation** Causes severe skin burns and eye damage.

**HYDROCHLORIC ACID ...% (7647-01-0)**

| Method   | Species  | Exposure route | Effective dose | Exposure time | Results                 |
|----------|----------|----------------|----------------|---------------|-------------------------|
| OECD 431 | EPISKIN™ | in vitro       | 10% Solution   |               | Corrosive; H314, Cat.1B |
| OECD 431 | EPISKIN™ | in vitro       | 25% Solution   |               | Corrosive; H314, Cat.1A |

**Serious eye damage/eye irritation** Causes serious eye damage.

**HYDROCHLORIC ACID ...% (7647-01-0)**

| Method                                               | Species | Exposure route | Effective dose | Exposure time | Results                                |
|------------------------------------------------------|---------|----------------|----------------|---------------|----------------------------------------|
| Expert judgment and weight of evidence determination |         |                | 1% Solution    |               | Corrosive<br>Causes serious eye damage |

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

**HYDROCHLORIC ACID ...% (7647-01-0)**

| 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****HYDROCHLORIC ACID ...% (7647-01-0)**

| Method | Species | Results |
|--------|---------|---------|
|--------|---------|---------|

|                                                                                                         |                       |                                |
|---------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------|
| Similar to OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test                             | Chinese hamster cells | Clastogenic effect (Due to pH) |
| Similar to OECD Test No. 476: In Vitro Mammalian Cell Gene Mutation Tests using the Hprt and xprt genes | Mouse lymphoma cells  | Mutagenic (Due to pH)          |

**Carcinogenicity** Based on available data the classification criteria are not met.

Component Information  
HYDROCHLORIC ACID ...% (7647-01-0)

| Method | Species | Results                                                |
|--------|---------|--------------------------------------------------------|
|        | Rat     | NOAEC =0.015 mg/l Inhalation - Gas<br>Not Carcinogenic |

**Reproductive toxicity** Based on available data the classification criteria are not met.

**STOT - single exposure** May cause respiratory irritation.

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

Component Information  
HYDROCHLORIC ACID ...% (7647-01-0)

| Method                       | Species | Exposure route    | Effective dose | Exposure time | Results      |
|------------------------------|---------|-------------------|----------------|---------------|--------------|
| OECD 413 Subchronic toxicity | Rat     | Inhalation<br>Gas | ppm/6h/d       |               | NOAEL 20 ppm |

**Aspiration hazard** Based on available data the classification criteria are not met.

**Other adverse effects** No information available.

## SECTION 12: Ecological information

### 12.1. Toxicity

**Ecotoxicity** Based on available data, the classification criteria are not met. Substantial amounts of the product may lead to a local change in acidity in small water systems which may have adverse effects on aquatic organisms.

### 12.2. Persistence and degradability

**Persistence and degradability** The methods for determining biodegradability are not applicable to inorganic substances. Will freely dissociate to hydrogen and chloride ions.

HYDROCHLORIC ACID ...% (7647-01-0)

| Method | Exposure time | Value | Results                                                                                  |
|--------|---------------|-------|------------------------------------------------------------------------------------------|
|        |               |       | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

**Bioaccumulation** Not likely to bioaccumulate.

**12.4. Mobility in soil**

**Mobility in soil** No information available.

**Mobility** 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         |
|------------------------|---------------------------------|
| HYDROCHLORIC ACID ...% | 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.

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

14.1 UN number or ID number UN1789  
 14.2 UN proper shipping name HYDROCHLORIC ACID  
 14.3 Transport hazard class(es) 8  
 14.4 Packing group II  
 14.5 Environmental hazards Not applicable  
 14.6 Special precautions for user  
     Special Provisions A3, A803  
     ERG Code 8L

**IMDG**

14.1 UN number or ID number UN1789  
 14.2 UN proper shipping name HYDROCHLORIC ACID  
 14.3 Transport hazard class(es) 8  
 14.4 Packing group II  
 14.5 Environmental hazards Not applicable  
 14.6 Special precautions for user  
     Special Provisions None  
     EmS-No F-A, S-B  
 14.7 Maritime transport in bulk according to IMO instruments No information available

**RID**

14.1 UN number or ID number UN1789  
 14.2 UN proper shipping name HYDROCHLORIC ACID  
 14.3 Transport hazard class(es) 8  
 14.4 Packing group II  
 14.5 Environmental hazards Not applicable  
 14.6 Special precautions for user  
     Special Provisions 520  
     Classification code C1

**ADR**

|                                          |                   |
|------------------------------------------|-------------------|
| <b>14.1 UN number or ID number</b>       | UN1789            |
| <b>14.2 UN proper shipping name</b>      | HYDROCHLORIC ACID |
| <b>14.3 Transport hazard class(es)</b>   | 8                 |
| <b>14.4 Packing group</b>                | II                |
| <b>14.5 Environmental hazards</b>        | Not applicable    |
| <b>14.6 Special precautions for user</b> |                   |
| Special Provisions                       | 520               |
| Classification code                      | C1                |
| Tunnel restriction code                  | (E)               |

**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 |
|------------------------------------|-------------------------------------------|--------------------------------------------------------|
| HYDROCHLORIC ACID ...% - 7647-01-0 | 75                                        | -                                                      |

**Persistent Organic Pollutants**

Not applicable

**Export Notification requirements**

Not applicable

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

Not applicable

| Chemical name                      | Lower-tier requirements (tons) | Upper-tier requirements (tons) |
|------------------------------------|--------------------------------|--------------------------------|
| HYDROCHLORIC ACID ...% - 7647-01-0 | 25                             | 250                            |

**The Ozone-Depleting Substances Regulations 2015**

Not applicable

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

Not applicable

| Chemical name                      | The Biocidal Products Regulations 2001 (as amended)                                                  |
|------------------------------------|------------------------------------------------------------------------------------------------------|
| HYDROCHLORIC ACID ...% - 7647-01-0 | Product-type 2: Disinfectants and algacides not intended for direct application to humans or animals |

**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

| Chemical name          | Poisons and Explosive Precursors |
|------------------------|----------------------------------|
| HYDROCHLORIC ACID ...% | Poison, Reportable 10 % w/w      |

**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/NDSL** - 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**

H290 - May be corrosive to metals

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

**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 **Not applicable**

**Classification procedure**

|                                                                 |                    |
|-----------------------------------------------------------------|--------------------|
| Classification according to Regulation (EC) No. 1272/2008 [CLP] | Method Used        |
| Acute oral toxicity                                             | Calculation method |
| Acute dermal toxicity                                           | Calculation method |
| 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                               | Calculation method |
| Respiratory sensitisation                                       | Calculation method |
| Skin sensitisation                                              | Calculation method |
| Mutagenicity                                                    | Calculation method |
| Carcinogenicity                                                 | Calculation method |
| Reproductive toxicity                                           | Calculation method |
| STOT - single exposure                                          | Calculation method |
| STOT - repeated exposure                                        | Calculation method |
| Acute aquatic toxicity                                          | Calculation method |
| 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) (AEGL(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** J Forth

**Revision date** 24-Oct-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]

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Chemical name</b>                  | HYDROCHLORIC ACID                                                                         |
| <b>REACH registration number</b>      | 01-2119484862-27-XXXX                                                                     |
| <b>CAS No</b>                         | 7647-01-0                                                                                 |
| <b>EC No (EU Index No)</b>            | 231-595-7                                                                                 |
| <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>                               | Manufacture of substance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <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> | ERC1 - Manufacture of substances 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>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>PROC15 - Use as laboratory reagent |
| <b>Sector(s) of use</b>                    | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC1 - Manufacture of substances  
- ERC2 - Formulation of preparations (mixtures)

**Covers concentrations up to** 40%

**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

#### Risk management measures

|                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions | Water-based process Process optimised for efficient use of raw materials Volatile compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
| Additional good practice advice beyond the REACH Chemical Safety Report               | Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks                                                                                                                                                    |

**Control measures to prevent releases**

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                        |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewatertreatment plant that incorporates both primary and secondary treatments. |

**Control of worker exposure**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                                                                           |
| Volatility                                                                             | High                                                                                                                                                                                                                                                                                                                              |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure                                                                                                                                                                                                                                                                                                                                            |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                                                                                                                                                                  |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                                |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                           |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                       |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to |

|                                                                                       |                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                       | de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90%                                                                                                     |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                      |
| Remarks                                                                               | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                           |
| Indoor/Outdoor use                                                                    | Covers indoor and outdoor use                                                                                                                                                                                                                  |
| Operational conditions                                                                | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                      |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                                                                                                                                                                                 |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                                                                                                                                                                  |
| Volatility                                                                             | High                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                                        |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                                                                                                                                                                  |
| Volatility                                                                             | High                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                             |                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)       | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| Covers concentrations up to | 40%                                                                                                                           |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 Efficiency of at least 95% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                                                                                                                                                                                                 |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                                                                                                   |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                                                                                                                                                                                       |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Physical form of product                                                               | Liquid, vapour pressure > 10 kPa at STP                                                                                                                                                                                                                                                                                                                                                                                  |
| Volatility                                                                             | High                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Exposure duration                                                                      | Avoid carrying out operation for more than 4 hours 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation Clean equipment and the work area every day                                                                                                                                                                                    |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC1 - Manufacture of substances  
- ERC2 - Formulation of preparations (mixtures)**

**Predicted No Effect Concentration  
(PNEC)**

|                            |            |
|----------------------------|------------|
| Freshwater                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

**Remarks** Qualitative approach used to conclude safe use

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

**Worker - inhalative, long-term - local**

8 mg/m<sup>3</sup>

**Worker - inhalative, short-term - local**

15 mg/m<sup>3</sup>

| Calculation method                                                                                                                | Used ECETOC TRA model                      |                          |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------|-----------------------------------|
| 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<br>- local  | 0.01 mg/m <sup>3</sup>   | 0                                 |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - inhalative, short-term<br>- local | 0.04 mg/m <sup>3</sup>   | 0                                 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup>    | 0.2                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local  | 1.25 mg/m <sup>3</sup>   | 0.25                              |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local | 5 mg/m <sup>3</sup>      | 0.5                               |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, long-term<br>- local  | 0.45 mg/m <sup>3</sup>   | 0.09                              |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities     | Worker - inhalative, short-term<br>- local | 1.8 mg/m <sup>3</sup>    | 0.18                              |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                   | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC15 - Use as laboratory reagent                                                                                                | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC15 - Use as laboratory reagent                                                                                                | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>      | 0.4                               |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to

define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at. <http://www.ecetoc.org/tra>.

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

**Chemical name** HYDROCHLORIC ACID  
**REACH registration number** 01-2119484862-27-XXXX  
**CAS No** 7647-01-0  
**EC No (EU Index No)** 231-595-7  
**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 as an intermediate  
**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  
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 PROC15 - Use as laboratory reagent  
**Product category(ies)** PC19 - Intermediate  
**Sector(s) of use** SU0 - Other SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites  
 SU4 - Manufacture of food products SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals SU11 - Manufacture of rubber products SU12 - Manufacture of plastics products, including compounding and conversion SU13 - Manufacture of other non-metallic mineral products SU19 - Building and construction work

### 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)

**Covers concentrations up to** 40%  
**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

#### Risk management measures

|                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions | Water-based process Process optimised for efficient use of raw materials Volatile compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
| Additional good practice advice beyond the REACH Chemical Safety Report               | Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks                                                                                                                                                    |

**Control measures to prevent releases**

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                        |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewatertreatment plant that incorporates both primary and secondary treatments. |

**Control of worker exposure**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                                                                                             |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)                                                                                                                                                                                                                 |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |

|                                                                                       |                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                               |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation |
| Remarks                                                                               | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                                    | Covers indoor and outdoor use                                                                                                                                                                                                                                                |
| Operational conditions                                                                | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                    |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent                                                                                                                                                                                                                                                                                                                                                                                       |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation Clean equipment and the work area every day                                                                                                                                                                                    |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

### 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                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

**Remarks** Qualitative approach used to conclude safe use

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

|                                         |                      |
|-----------------------------------------|----------------------|
| Worker - inhalative, long-term - local  | 8 mg/m <sup>3</sup>  |
| Worker - inhalative, short-term - local | 15 mg/m <sup>3</sup> |

|                                                          |                                         |                          |                                   |
|----------------------------------------------------------|-----------------------------------------|--------------------------|-----------------------------------|
| <b>Calculation method</b>                                | Used ECETOC TRA model                   |                          |                                   |
| 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 - local  | 0.01 mg/m <sup>3</sup>   | 0                                 |
| PROC1 - Use in closed process, no likelihood of exposure | Worker - inhalative, short-term - local | 0.01 mg/m <sup>3</sup>   | 0                                 |

|                                                                                                                 |                                            |                       |     |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------|-----|
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                   | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup> | 0.3 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                   | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>   | 0.6 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                  | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup> | 0.3 |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                  | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>   | 0.6 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                        | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>   | 0.2 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                        | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>   | 0.4 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>   | 0.4 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>   | 0.8 |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>   | 0.2 |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>   | 0.4 |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at. <http://www.ecetoc.org/tra>.

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

**Chemical name** HYDROCHLORIC ACID  
**REACH registration number** 01-2119484862-27-XXXX  
**CAS No** 7647-01-0  
**EC No (EU Index No)** 231-595-7  
**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  
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)  
 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)  
**Product category(ies)** PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents  
 PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals  
**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites  
 SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

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

#### Section 2.1 - Control of environmental exposure

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

**Covers concentrations up to** 40%  
**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

#### Risk management measures

|                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions | Water-based process Process optimised for efficient use of raw materials Volatile compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
| Additional good practice advice beyond                                                | Site should have a spill plan to ensure that adequate safeguards are in place to minimise                                                                                                                                                                                                                                                   |

|                                  |                                                                                                |
|----------------------------------|------------------------------------------------------------------------------------------------|
| the REACH Chemical Safety Report | the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks |
|----------------------------------|------------------------------------------------------------------------------------------------|

**Control measures to prevent releases**

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                        |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewatertreatment plant that incorporates both primary and secondary treatments. |

**Control of worker exposure**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                                                                                             |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                             |                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                       | 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 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| Covers concentrations up to                                                 | 40%                                                                                                                                                                                                                                                                                                                                        |
| Use frequency                                                               | Covers daily exposures up to 8 hours (unless stated differently).                                                                                                                                                                                                                                                                          |
| Technical conditions and measures to control dispersion from source towards | Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down                                                                                                                                                        |

|                                                                                       |                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| the worker                                                                            | and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90%                                         |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                               |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation |
| Remarks                                                                               | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                                    | Covers indoor and outdoor use                                                                                                                                                                                                                                                |
| Operational conditions                                                                | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                    |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 Efficiency of at least 95% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                                                                                                                                                                                                 |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                                                                                                   |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### Section 3 - Exposure estimation

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

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

|                            |            |
|----------------------------|------------|
| Freshwater                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

Remarks Qualitative approach used to conclude safe use

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

|                                         |                      |
|-----------------------------------------|----------------------|
| Worker - inhalative, long-term - local  | 8 mg/m <sup>3</sup>  |
| Worker - inhalative, short-term - local | 15 mg/m <sup>3</sup> |

##### Calculation method

Used ECETOC TRA model

| 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 - local  | 0.01 mg/m <sup>3</sup>   | 0                                 |
| PROC1 - Use in closed process, no likelihood of exposure                                                                            | Worker - inhalative, short-term - local | 0.04 mg/m <sup>3</sup>   | 0                                 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                       | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                       | Worker - inhalative, short-term - local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local  | 1.25 mg/m <sup>3</sup>   | 0.25                              |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local | 5 mg/m <sup>3</sup>      | 0.5                               |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at                            | Worker - inhalative, long-term - local  | 0.45 mg/m <sup>3</sup>   | 0.09                              |

|                                                                                                                               |                                            |                       |      |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------|------|
| dedicated facilities                                                                                                          |                                            |                       |      |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term<br>- local | 1.8 mg/m <sup>3</sup> | 0.18 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>   | 0.4  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>   | 0.8  |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at: <http://www.ecetoc.org/tra>.

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

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Chemical name</b>                  | HYDROCHLORIC ACID                                                                         |
| <b>REACH registration number</b>      | 01-2119484862-27-XXXX                                                                     |
| <b>CAS No</b>                         | 7647-01-0                                                                                 |
| <b>EC No (EU Index No)</b>            | 231-595-7                                                                                 |
| <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>                     | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <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) |
| <b>Product category(ies)</b>               | PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents<br>PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Sector(s) of use</b>                    | SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU22 - Professional uses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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

#### Section 2.1 - Control of environmental exposure

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

**Covers concentrations up to** 40%

#### Product characteristics

|                          |                                             |
|--------------------------|---------------------------------------------|
| Physical form of product | Liquid, vapour pressure 0.5 - 10 kPa at STP |
|--------------------------|---------------------------------------------|

#### Other operational conditions of use affecting environmental exposure

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

#### Risk management measures

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| Technical onsite conditions and | Water-based process Process optimised for efficient use of raw materials Volatile |
|---------------------------------|-----------------------------------------------------------------------------------|

|                                                                         |                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| measures to reduce or limit discharges, air emissions                   | compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
| Additional good practice advice beyond the REACH Chemical Safety Report | Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks                                                                  |

**Control measures to prevent releases**

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                         |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments. |

**Control of worker exposure**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                                                                                             |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                             |                                                                                                                                                                                                          |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)       | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| Covers concentrations up to | 40%                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                                    |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | 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)                                                                                                                                                                            |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |

### Section 3 - Exposure estimation

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

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

|                            |            |
|----------------------------|------------|
| Freshwater                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

Remarks Qualitative approach used to conclude safe use

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

|                                         |                      |
|-----------------------------------------|----------------------|
| Worker - inhalative, long-term - local  | 8 mg/m <sup>3</sup>  |
| Worker - inhalative, short-term - local | 15 mg/m <sup>3</sup> |

##### Calculation method

Used ECETOC TRA model

| 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 - local  | 0.1 mg/m <sup>3</sup>    | 0.02                              |
| PROC1 - Use in closed process, no likelihood of exposure                                                                            | Worker - inhalative, short-term - local | 0.4 mg/m <sup>3</sup>    | 0.04                              |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                       | Worker - inhalative, long-term - local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                       | Worker - inhalative, short-term - local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, long-term - local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                      | Worker - inhalative, short-term - local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, long-term - local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                            | Worker - inhalative, short-term - local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, long-term - local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact) | Worker - inhalative, short-term - local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, long-term - local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities   | Worker - inhalative, short-term - local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at                            | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |

|                                                                                                                               |                                            |                       |     |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------|-----|
| dedicated facilities                                                                                                          |                                            |                       |     |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>   | 0.6 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup> | 0.3 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)               | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>   | 0.6 |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at: <http://www.ecetoc.org/tra>.

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

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Chemical name</b>                  | HYDROCHLORIC ACID                                                                         |
| <b>REACH registration number</b>      | 01-2119484862-27-XXXX                                                                     |
| <b>CAS No</b>                         | 7647-01-0                                                                                 |
| <b>EC No (EU Index No)</b>            | 231-595-7                                                                                 |
| <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>                               | Industrial use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <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<br>ERC6b - Industrial use of reactive processing aids                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <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>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>PROC19 - Hand-mixing with intimate contact and only PPE available |
| <b>Product category(ies)</b>               | PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents<br>PC34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids<br>PC35 - Washing and cleaning products (including solvent based products)<br>PC37 - Water treatment chemicals                                                                                                                                                                                                                                                                                                                          |
| <b>Sector(s) of use</b>                    | SU0 - Other<br>SU2a - Mining (without offshore industries)<br>SU2b - Offshore industries<br>SU4 - Manufacture of food products<br>SU5 - Manufacture of textiles, leather, fur<br>SU9 - Manufacture of fine chemicals<br>SU14 - Manufacture of basic metals, including alloys<br>SU15 - Manufacture of fabricated metal products, except machinery and equipment<br>SU16 - Manufacture of computer, electronic and optical products, electrical equipment                                                                                                                                                                                  |

### 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  
- ERC6b - Industrial use of reactive processing aids

**Covers concentrations up to** 40%

**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

**Risk management measures**

|                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions | Water-based process Process optimised for efficient use of raw materials Volatile compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
| Additional good practice advice beyond the REACH Chemical Safety Report               | Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks                                                                                                                                                    |

**Control measures to prevent releases**

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                        |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewatertreatment plant that incorporates both primary and secondary treatments. |

**Control of worker exposure**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation) PROC10 - Roller application or brushing                                                                                                                                                                                                                                     |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                       |                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies) | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        | including weighing) PROC13 - Treatment of articles by dipping and pouring PROC19 - Hand-mixing with intimate contact and only PPE available                                                                                                                                                                                                                                                                              |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 Efficiency of at least 95% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                                                                                                                                                                                                 |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                                                                                                   |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                                                                                                                                                                                  |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

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

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

### Section 3 - Exposure estimation

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

**- ERC6b - Industrial use of reactive processing aids**

#### Predicted No Effect Concentration (PNEC)

|                            |            |
|----------------------------|------------|
| Freshwater                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

**Remarks** Qualitative approach used to conclude safe use

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

|                                         |                      |
|-----------------------------------------|----------------------|
| Worker - inhalative, long-term - local  | 8 mg/m <sup>3</sup>  |
| Worker - inhalative, short-term - local | 15 mg/m <sup>3</sup> |

| Calculation method                                                            | Used ECETOC TRA model                   |                          |                                   |
|-------------------------------------------------------------------------------|-----------------------------------------|--------------------------|-----------------------------------|
| 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 - local  | 0.01 mg/m <sup>3</sup>   | 0                                 |
| PROC1 - Use in closed process, no likelihood of exposure                      | Worker - inhalative, short-term - local | 0.04 mg/m <sup>3</sup>   | 0                                 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - inhalative, short-term - local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, long-term - local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                | Worker - inhalative, short-term - local | 6 mg/m <sup>3</sup>      | 0.6                               |

|                                                                                                                 |                                            |                        |      |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------|------|
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                        | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>    | 0.2  |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                        | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>    | 0.4  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>    | 0.4  |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>    | 0.8  |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, long-term<br>- local  | 1.25 mg/m <sup>3</sup> | 0.25 |
| PROC10 - Roller application or brushing                                                                         | Worker - inhalative, short-term<br>- local | 5 mg/m <sup>3</sup>    | 0.5  |
| PROC13 - Treatment of articles by dipping and pouring                                                           | Worker - inhalative, long-term<br>- local  | 1.25 mg/m <sup>3</sup> | 0.25 |
| PROC13 - Treatment of articles by dipping and pouring                                                           | Worker - inhalative, short-term<br>- local | 5 mg/m <sup>3</sup>    | 0.5  |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>    | 0.2  |
| PROC15 - Use as laboratory reagent                                                                              | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>    | 0.4  |
| PROC19 - Hand-mixing with intimate contact and only PPE available                                               | Worker - inhalative, long-term<br>- local  | 1.25 mg/m <sup>3</sup> | 0.25 |
| PROC19 - Hand-mixing with intimate contact and only PPE available                                               | Worker - inhalative, short-term<br>- local | 5 mg/m <sup>3</sup>    | 0.5  |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at: <http://www.ecetoc.org/tra>.

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

|                                       |                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Chemical name</b>                  | HYDROCHLORIC ACID                                                                         |
| <b>REACH registration number</b>      | 01-2119484862-27-XXXX                                                                     |
| <b>CAS No</b>                         | 7647-01-0                                                                                 |
| <b>EC No (EU Index No)</b>            | 231-595-7                                                                                 |
| <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>                               | Professional use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Type</b>                                | Worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Main user group</b>                     | Professional uses: Public domain (administration, education, entertainment, services, craftsmen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Environmental release category(ies)</b> | ERC8b - Wide dispersive indoor use of reactive substances in open systems ERC8e - Wide dispersive outdoor use of reactive substances 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>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 category(ies)</b>               | PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents<br>PC21 - Laboratory chemicals PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Sector(s) of use</b>                    | SU0 - Other SU20 - Health services SU22 - Professional uses SU23 - Recycling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8b - Wide dispersive indoor use of reactive substances in open systems  
- ERC8e - Wide dispersive outdoor use of reactive substances in open systems

**Covers concentrations up to** 40%  
**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Further information

|                        |                    |
|------------------------|--------------------|
| Operational conditions | Indoor/Outdoor use |
|------------------------|--------------------|

#### Risk management measures

|                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical onsite conditions and measures to reduce or limit discharges, air emissions | Water-based process Process optimised for efficient use of raw materials Volatile compounds subject to air emission controls Wastewater emissions generated from equipment cleaning with water Prevent discharge of undissolved substance to or recover from onsite wastewater Contain leaks or spills within cabinets with removable trays |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                         |                                                                                                                                                                                          |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional good practice advice beyond the REACH Chemical Safety Report | Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases Prevent leaks and prevent soil/water pollution caused by leaks |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Control measures to prevent releases

|       |                                      |
|-------|--------------------------------------|
| Water | Onsite wastewater treatment required |
|-------|--------------------------------------|

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

|                         |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal                | External treatment and disposal of waste should comply with applicable local and/or national regulations                                                                                                                                                                                                                                        |
| Waste treatment methods | Substance will dissociate upon contact with water; the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk All contaminated waste water must be processed in an industrial or municipal wastewatertreatment plant that incorporates both primary and secondary treatments. |

#### Control of worker exposure

|                                                                                        |                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC1 - Use in closed process, no likelihood of exposure                                                                                                                                                                                                                                                                          |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                               |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 90%                                                                                    |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                              |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                     |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                         |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed batch process (synthesis or formulation)                                                                                                                                                                                                                                                                             |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                                                                                                                                                                                                                                                                |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                     |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points |

|                                                                                       |                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                       | where emissions occur Efficiency of at least 90%                                                                                                                                                                                                                             |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                               |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation |
| Remarks                                                                               | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                         |
| Indoor/Outdoor use                                                                    | Covers indoor and outdoor use                                                                                                                                                                                                                                                |
| Operational conditions                                                                | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                    |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities                                                                                                                                                                                                                                                                                        |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC10 - Roller application or brushing                                                                                                                                                                                                                                                                                                                                                                                  |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC11 - Non industrial spraying                                                                                                                                                                                                                                                                                                                                        |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                     |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points |

|                                                                                       |                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                       | where emissions occur Efficiency of at least 90%                                                                                                                                                                                               |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95% |
| Organisational measures to prevent /limit releases, dispersion and exposure           | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                      |
| Remarks                                                                               | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                           |
| Indoor/Outdoor use                                                                    | Indoor use                                                                                                                                                                                                                                     |
| Operational conditions                                                                | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                      |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC13 - Treatment of articles by dipping and pouring                                                                                                                                                                                                                                                                                                                                                                    |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Use bulk or semi-bulk handling systems Clean equipment and the work area every day Ensure material transfers are under containment or extract ventilation                                                                                                                                             |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Covers indoor and outdoor use                                                                                                                                                                                                                                                                                                                                                                                            |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process category(ies)                                                                  | PROC15 - Use as laboratory reagent PROC19 - Hand-mixing with intimate contact and only PPE available                                                                                                                                                                                                                                                                                                                     |
| Covers concentrations up to                                                            | 40%                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan Drain down and flush system prior to equipment break-in or maintenance Clear transfer lines prior to de-coupling Handle substance within a closed system Provide extract ventilation to points where emissions occur Efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation  | Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear suitable coveralls to prevent exposure to the skin Wear a respirator providing a minimum efficiency of 95%                                                                                                                                                                           |
| Organisational measures to prevent /limit releases, dispersion and exposure            | Ensure control measures are regularly inspected and maintained Ensure operatives are trained to minimise exposures Ensure material transfers are under containment or extract ventilation                                                                                                                                                                                                                                |
| Remarks                                                                                | Assumes a good basic standard of occupational hygiene is implemented                                                                                                                                                                                                                                                                                                                                                     |
| Indoor/Outdoor use                                                                     | Indoor use                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operational conditions                                                                 | Assumes activities are at ambient temperature (unless stated differently)                                                                                                                                                                                                                                                                                                                                                |

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

**Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems - ERC8e - Wide dispersive outdoor use of reactive substances in open systems**

**Predicted No Effect Concentration (PNEC)**

|                            |            |
|----------------------------|------------|
| Freshwater                 | 0.036 mg/l |
| Marine water               | 0.036 mg/l |
| Soil                       | 0.036 mg/l |
| Impact on Sewage Treatment | 0.036 mg/l |
| Intermittent release       | 0.045 mg/l |

Remarks Qualitative approach used to conclude safe use

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

|                                         |                      |
|-----------------------------------------|----------------------|
| Worker - inhalative, long-term - local  | 8 mg/m <sup>3</sup>  |
| Worker - inhalative, short-term - local | 15 mg/m <sup>3</sup> |

| Calculation method                                                                                                                | Used ECETOC TRA model                      |                          |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------|-----------------------------------|
| 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<br>- local  | 0.1 mg/m <sup>3</sup>    | 0.02                              |
| PROC1 - Use in closed process, no likelihood of exposure                                                                          | Worker - inhalative, short-term<br>- local | 0.4 mg/m <sup>3</sup>    | 0.04                              |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC2 - Use in closed, continuous process with occasional controlled exposure                                                     | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC3 - Use in closed batch process (synthesis or formulation)                                                                    | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises                                          | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, long-term<br>- local  | 1 mg/m <sup>3</sup>      | 0.2                               |
| PROC10 - Roller application or brushing                                                                                           | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup>      | 0.4                               |
| PROC11 - Non industrial spraying                                                                                                  | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC11 - Non industrial spraying                                                                                                  | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC13 - Treatment of articles by dipping and pouring                                                                             | Worker - inhalative, long-term<br>- local  | 1.5 mg/m <sup>3</sup>    | 0.3                               |
| PROC13 - Treatment of articles by dipping and pouring                                                                             | Worker - inhalative, short-term<br>- local | 6 mg/m <sup>3</sup>      | 0.6                               |
| PROC15 - Use as laboratory reagent                                                                                                | Worker - inhalative, long-term<br>- local  | 2 mg/m <sup>3</sup>      | 0.4                               |
| PROC15 - Use as laboratory reagent                                                                                                | Worker - inhalative, short-term<br>- local | 8 mg/m <sup>3</sup>      | 0.8                               |
| PROC19 - Hand-mixing with intimate                                                                                                | Worker - inhalative, long-term             | 1 mg/m <sup>3</sup>      | 0.2                               |

|                                                                   |                                            |                     |     |
|-------------------------------------------------------------------|--------------------------------------------|---------------------|-----|
| contact and only PPE available                                    | - local                                    |                     |     |
| PROC19 - Hand-mixing with intimate contact and only PPE available | Worker - inhalative, short-term<br>- local | 4 mg/m <sup>3</sup> | 0.4 |

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. Used ECETOC TRA model. Further information on the assumptions contained in this exposure scenario can be found at. <http://www.ecetoc.org/tra>.

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

**Chemical name** HYDROCHLORIC ACID  
**REACH registration number** 01-2119484862-27-XXXX  
**CAS No** 7647-01-0  
**EC No (EU Index No)** 231-595-7  
**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** Consumer use  
**Type** Consumer  
**Main user group** Consumer uses: Private households (= general public = consumers)  
**Environmental release category(ies)** ERC8b - Wide dispersive indoor use of reactive substances in open systems ERC8e - Wide dispersive outdoor use of reactive substances in open systems  
**Product category(ies)** PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents  
 PC21 - Laboratory chemicals PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals PC38 - Welding and soldering products, flux products  
**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)** - ERC8b - Wide dispersive indoor use of reactive substances in open systems  
 - ERC8e - Wide dispersive outdoor use of reactive substances in open systems

**Covers concentrations up to** 20%  
**Other operational conditions of use affecting environmental exposure**

|               |               |
|---------------|---------------|
| Type          | Continuous    |
| Emission days | 360 days/year |

#### Conditions and measures related to municipal sewage treatment plant

|      |               |
|------|---------------|
| Type | Municipal STP |
|------|---------------|

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

|          |                                                                                                          |
|----------|----------------------------------------------------------------------------------------------------------|
| Disposal | External treatment and disposal of waste should comply with applicable local and/or national regulations |
|----------|----------------------------------------------------------------------------------------------------------|

#### Control of consumer exposure

|                             |                                                                                                                                                                                                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product categories [PC]     | PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents PC21 - Laboratory chemicals PC35 - Washing and cleaning products (including solvent based products) PC37 - Water treatment chemicals PC38 - Welding and soldering products, flux products |
| Covers concentrations up to | 20%                                                                                                                                                                                                                                                                               |
| Physical form of product    | Liquid, vapour pressure < 0.5 kPa at STP                                                                                                                                                                                                                                          |

|                          |                                                                                                                                                                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amounts used             | 0.51 g/event                                                                                                                                                                                                                                                        |
| Exposure duration        | Avoid carrying out activities involving exposure for more than 4 hours                                                                                                                                                                                              |
| Risk management measures | Do not inhale spray vapour Wear suitable gloves and eye/face protection Open doors and windows Regular cleaning of equipment Regular cleaning of work area Ensure that direct skin contact is avoided Open windows during application to ensure natural ventilation |
| Operational conditions   | Covers use at ambient temperatures                                                                                                                                                                                                                                  |

### Section 3 - Exposure estimation

**Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems - ERC8e - Wide dispersive outdoor use of reactive substances in open systems**

**Predicted No Effect Concentration (PNEC)**

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|----------------------------|------------|
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**Remarks** Qualitative approach used to conclude safe use

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

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