

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

Supersedes date 19-May-2023

Revision date 19-Sep-2024

Revision Number 2

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

1.1. Product identifier

Product Code(s) 51192
Safety data sheet number 51192
Product Name 3,5,5-TRIMETHYLHEXANOIC ACID
EC Number 221-975-0
CAS No 3302-10-1
Synonyms ISONONANOIC ACID, ISONONANOIC ACID M, CAFLON CA-INNA, CAFLON CA-INNA M
Pure substance/mixture Substance

Contains 3,5,5-TRIMETHYLHEXANOIC ACID

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

Recommended use Intermediate
Lubricant
Metal working fluids / rolling oils,
Use in laboratories

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

Acute toxicity - Oral	Category 4 - (H302)
Skin corrosion/irritation	Category 2 - (H315)

Serious eye damage/eye irritation

Category 1 - (H318)

2.2. Label elements

Contains 3,5,5-TRIMETHYLHEXANOIC ACID

**Signal word**

Danger

Hazard statements

H302 - Harmful if swallowed

H315 - Causes skin irritation

H318 - Causes serious eye damage

Precautionary statements

P280 - Wear protective gloves and eye/face protection

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

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

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

P310 - Immediately call a POISON CENTER or doctor

Additional information

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

2.3. Other hazards

Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.

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)
3,5,5-TRIMETHYLHEXANOIC ACID 3302-10-1	90 - 100%	221-975-0	-	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318)	-	-	-

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****General advice**

Show this safety data sheet to the doctor in attendance. Immediate medical attention is

required.

Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical attention.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Get medical attention immediately if symptoms occur.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

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

Eyes	Causes serious eye damage.
Dermal	Causes skin irritation.
Ingestion	Harmful if swallowed

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

Note to doctors	Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Dry chemical, CO2, alcohol-resistant foam or water spray.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Thermal decomposition can lead to release of irritating gases and vapours. Vapours may form explosive mixtures with air. Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.
Hazardous combustion products	Carbon monoxide. Carbon dioxide (CO2).

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.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Avoid contact with skin, eyes and inhalation of vapours. Wear
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protective gloves/clothing and eye/face protection.

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

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Take action to prevent static discharges. Use non sparking handtools and explosion-proof electric equipment.

Methods for cleaning up Take precautionary measures against static discharges.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

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 Handle in accordance with good industrial hygiene and safety practice. In case of insufficient ventilation, wear suitable respiratory equipment. Ensure adequate ventilation. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember. Use personal protection recommended in Section 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

General hygiene considerations Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Ensure that eyewash stations and safety showers are close to the workstation location.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up. Protect from moisture. Store away from other materials. Keep at temperatures between 0 and 38 °C. Avoid contact with: Amines. Bases. Suitable container/equipment material: stainless steel.

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

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
3,5,5-TRIMETHYLHEXANOIC ACID 3302-10-1		1.25 mg/kg [4] [6]	4.4 mg/m ³ [4] [6]

[4] Systemic health effects.
[6] Long term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
3,5,5-TRIMETHYLHEXANOIC ACID 3302-10-1	0.6 mg/m ³ [4] [6]	0.6 mg/m ³ [4] [6]	5 mg/m ³ [5] [6]

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

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
3,5,5-TRIMETHYLHEXANOIC ACID 3302-10-1	0.068 mg/l		0.0068 mg/l		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
3,5,5-TRIMETHYLHEXANOIC ACID 3302-10-1	1.08 mg/kg	0.108 mg/kg		0.176 mg/kg	23 mg/l

8.2. Exposure controls

Engineering controls Ensure adequate ventilation. Local and General Ventilation. Use explosion-proof ventilating equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection Tight sealing safety goggles. Use eye protection according to EN 166.

Hand protection Wear suitable gloves. Impervious 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.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time

Long term (repeated)	Nitrile rubber	0.55 mm	> 480 minutes
Long term (repeated)	Polyvinyl chloride (PVC)	0.8 mm	

Skin and body protection	Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection	In case of inadequate ventilation wear respiratory protection. EN 136/140/141/145/143/149.
General hygiene considerations	Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	No information available
Appearance	Liquid
Colour	Colourless
Odour	Slight., Acidic.
Odour threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	-77 °C	DIN ISO 3016.
Initial boiling point and boiling range	236 °C	@ 1013 hPa.
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits		
Lower flammability or explosive limits	1.2%	
Flash point	117 °C	DIN EN ISO 2719.
Autoignition temperature	415 °C	@ 1009 hPa. DIN 51794.
Decomposition temperature		No information available.
pH		pH (diluted solution): 3.7 @ 10%.
pH (as aqueous solution)	4.4	solution (0.01 %).
Kinematic viscosity	12.744 mm ² /s	@ 20 °C.
Dynamic viscosity		No information available.
Water solubility	Insoluble in water	No information available.
Solubility(ies)	0.7 g/l	OECD 105.
Partition coefficient	log Kow: 3.2, Calculation method	OECD 117.
Vapour pressure	0.0046 hPa	@ 20 °C.
Relative density	0.895 @ 23°C	No information available.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density		No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Not considered to be explosive.	
Oxidising properties	Does not meet the criteria for classification as oxidising	

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No information available.
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10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember. Vapours may form explosive mixtures with air.

10.4. Conditions to avoid

Conditions to avoid Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

10.5. Incompatible materials

Incompatible materials Bases. Amines.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

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

Inhalation	Specific test data for the substance or mixture is not available. Inhalation of vapours in high concentration may cause irritation of respiratory system.
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Causes serious eye damage. Causes skin irritation.

Acute toxicity**Numerical measures of toxicity**

No information available

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
3,5,5-TRIMETHYLHEXANOIC ACID	1160 mg/kg rat	> 2000 mg/kg rat	-

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

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

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD 404	Rabbit	Dermal		4 hours	Causes skin irritation

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

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD 405	Rabbit	eye		72 hour	Causes serious eye damage

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD 405	Rabbit	eye		72 hours	Causes serious eye damage

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

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Exposure route	Results
OECD 406	Guinea pig	Dermal	Not a skin sensitiser

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

Component Information

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Results
OECD 471	in vitro	Negative
OECD 473	in vitro	Negative
OECD 476	in vitro	Negative

Carcinogenicity No information available.

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

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Results
OECD 415	Rat	NOAEL 79 - 228 mg/kg
OECD 422	Rat	NOAEL 10 - 30 mg/kg
OECD 443	Rat	NOAEL 25 mg/kg
OECD 414	Rat	NOAEL 60 mg/kg
OECD 414	Rabbit	NOAEL 250 mg/kg

STOT - single exposure No information available.

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

Component Information

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD 422	Rat	Oral			NOAEL 10 mg/kg bw/d
OECD 408	Rat	Oral		90 days	NOAEL 5 mg/kg bw/d

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 The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
OECD Test No. 203: Fish, Acute Toxicity Test	Oncorhynchus mykiss (rainbow trout)	LC50	122 mg/L	96 hours	
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test	Daphnia magna	EC50	68 mg/L	48 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	EbC50	81 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	ErC50	51 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	NOEC	10 mg/L	3 days	
OECD Test No. 209: Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)	activated sludge	EC50	470 mg/L	3 hours	

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

3,5,5-TRIMETHYLHEXANOIC ACID (3302-10-1)

Method	Exposure time	Value	Results
OECD Test No. 301A: Ready Biodegradability: DOC Die-Away Test (TG 301 A)	21 days	Biodegradation 96%	Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Bioconcentration factor (BCF) 4.1 - 7 @ 0.1 mg/l

Component Information

12.4. Mobility in soil

Mobility in soil log K_{oc} 2.79.

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
3,5,5-TRIMETHYLHEXANOIC 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. Do not puncture or incinerate cans. Avoid release to the environment.

Contaminated packaging Do not reuse empty containers.

SECTION 14: Transport information**IATA**

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

IMDG

14.1 UN number or ID number Not regulated
 14.3 Transport hazard class(es) Not regulated
 14.4 Packing group Not regulated
 14.5 Environmental hazards Not applicable
 14.6 Special precautions for user
 Special Provisions None
 14.7 Maritime transport in bulk according to IMO instruments No information available

RID

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

ADR

14.1 UN number or ID number Not regulated
 14.2 UN proper shipping name Not regulated
 14.3 Transport hazard class(es) Not regulated
 14.4 Packing group Not regulated
 14.5 Environmental hazards Not applicable
 14.6 Special precautions for user

Special Provisions

None

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

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

Product restricted per REACH Annex XVII: 3**Persistent Organic Pollutants**

Not applicable

Export Notification requirements

Not applicable

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Not applicable

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

Not applicable

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

Not applicable

International Inventories**TSCA**

Contact supplier for inventory compliance status

DSL/NDL

Contact supplier for inventory compliance status

EINECS/ELINCS

Contact supplier for inventory compliance status

ENCS

Contact supplier for inventory compliance status

IECSC

Contact supplier for inventory compliance status

KECI

Contact supplier for inventory compliance status

PICCS

Contact supplier for inventory compliance status

AIIC

Contact supplier for inventory compliance status

NZIoC

Contact supplier for inventory compliance status

Legend:**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**AIIC** - Australian Inventory of Industrial Chemicals**NZIoC** - New Zealand Inventory of Chemicals**15.2. Chemical safety assessment****Chemical Safety Report**

No information available

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet**Legend**

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)
 Ceiling Maximum limit value * Skin designation
 + Sensitisers
 Revision Note **SDS sections updated 1 2 6 7 9 10 11 12 15 16**

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 Spenceley

Supersedes date 19-May-2023

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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]

Chemical name 3,5,5-TRIMETHYLHEXANOIC ACID
REACH registration number 01-2119517580-45-XXXX
CAS No 3302-10-1
EC No (EU Index No) 221-975-0
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

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

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation & (re)packing of substances and mixtures
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 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)
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
 PROC15 - Use as laboratory reagent
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 100%
Amounts used

Type	Daily amount per site
Value	7000
Units	kg/d

Type	Annual amount per site
Value	700
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
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Other operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	2.5%
Release fraction to wastewater from process (initial release prior to RMM)	0.04%
Release fraction to soil from process (initial release prior to RMM)	0.01%

Operational conditions

Other	Assumes use at not more than 20°C above ambient temperature, unless stated differently
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Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000
Removal efficiency (total)	87.5%

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
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Control measures to prevent releases

Water	Acclimated biological treatment Efficiency of at least 98%
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Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and	Wear suitable gloves (tested to EN 374) and eye protection

health evaluation	
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC15 - Use as laboratory reagent
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

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

Predicted No Effect Concentration (PNEC)

Freshwater	0.068 mg/l
Freshwater sediment	1.08 mg/kg dw
Marine water	0.0068 mg/l
Marine sediment	0.108 mg/kg dw
Soil	0.176 mg/kg dw
Impact on Sewage Treatment	23 mg/l
Intermittent release	1.36 mg/l

Calculation method Used CHESAR model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.018 mg/l	0.26

Freshwater sediment	0.281 mg/kg dw	0.26
Marine water	1.77E-3 mg/l	0.261
Marine sediment	0.028 mg/kg dw	0.261
Soil	0.051 mg/kg dw	0.292
STP: Sewage Treatment Plant	0.175 mg/l	<0.01

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	1.25 mg/kg bw/day
Worker - inhalative, long-term - local	10 mg/m ³
Worker - inhalative, long-term - systemic	4.4 mg/m ³
Worker - inhalative, short-term - local	10 mg/m ³
Consumer - oral, long-term - systemic	0.6 mg/kg bw/day
Consumer - dermal, long-term - systemic	0.6 mg/kg bw/day
Consumer - inhalative, long-term - systemic	1.1 mg/m ³

Calculation method	Used CHESAR 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 - systemic	0.264 mg/m ³	0.026
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.034 mg/kg b.w./d	0.027
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.274 mg/kg b.w./d	0.219
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	7.912 mg/m ³	0.791
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.138 mg/kg b.w./d	0.11
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.549
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.659 mg/m ³	0.066
PROC8b - Transfer of substance or	Worker - dermal, long-term -	0.686 mg/kg b.w./d	0.548

preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	systemic		
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.594
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.549
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.34 mg/kg b.w./d	0.272

Section 4 - Guidance to check compliance with the exposure scenario

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. 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.

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

Chemical name 3,5,5-TRIMETHYLHEXANOIC ACID
REACH registration number 01-2119517580-45-XXXX
CAS No 3302-10-1
EC No (EU Index No) 221-975-0
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
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 GBR

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

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in Lubricants
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 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)
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC17 - Lubrication at high energy conditions and in partly open process
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

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

Covers concentrations up to 100%
Amounts used

Type	Daily amount per site
Value	5000
Units	kg/d

Type	Annual amount per site
Value	100
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
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Other operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	100%
Release fraction to wastewater from process (initial release prior to RMM)	0.1%
Release fraction to soil from process (initial release prior to RMM)	5%

Operational conditions

Other	Assumes use at not more than 20°C above ambient temperature, unless stated differently
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Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000
Removal efficiency (total)	87.5%

Further information

Operational conditions	Indoor/Outdoor use
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Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
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Control measures to prevent releases

Water	Acclimated biological treatment Efficiency of at least 99.9%
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Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90% Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with specific activity training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

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

Predicted No Effect Concentration (PNEC)

Freshwater	0.068 mg/l
Freshwater sediment	1.08 mg/kg dw
Marine water	0.0068 mg/l
Marine sediment	0.108 mg/kg dw
Soil	0.176 mg/kg dw
Impact on Sewage Treatment	23 mg/l

Intermittent release 1.36 mg/l

Calculation method	Used CHESAR model	
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.031 mg/l	0.462
Freshwater sediment	0.5 mg/kg dw	0.463
Marine water	3.15E-3 mg/l	0.463
Marine sediment	0.05 mg/kg dw	0.464
Soil	0.101 mg/kg dw	0.574
STP: Sewage Treatment Plant	0.313 mg/l	0.014

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	1.25 mg/kg bw/day
Worker - inhalative, long-term - local	10 mg/m ³
Worker - inhalative, long-term - systemic	4.4 mg/m ³
Worker - inhalative, short-term - local	10 mg/m ³
Consumer - oral, long-term - systemic	0.6 mg/kg bw/day
Consumer - dermal, long-term - systemic	0.6 mg/kg bw/day
Consumer - inhalative, long-term - systemic	1.1 mg/m ³

Calculation method	Used CHESAR 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 - systemic	0.264 mg/m ³	0.026
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.034 mg/kg b.w./d	0.027
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.274 mg/kg b.w./d	0.219
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.791 mg/m ³	0.079
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.68 mg/kg b.w./d	0.552
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.659 mg/m ³	0.066
PROC8b - Transfer of substance or preparation (charging/discharging)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548

from/to vessels/large containers at dedicated facilities			
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.549
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	3.165 mg/m ³	0.316
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658

Section 4 - Guidance to check compliance with the exposure scenario

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. 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.

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

Chemical name 3,5,5-TRIMETHYLHEXANOIC ACID
REACH registration number 01-2119517580-45-XXXX
CAS No 3302-10-1
EC No (EU Index No) 221-975-0
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
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Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in Lubricants
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC17 - Lubrication at high energy conditions and in partly open process
 PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
 - ERC9b - Wide dispersive outdoor use of substances in closed systems

Covers concentrations up to 100%
Amounts used

Type	Daily amount for wide dispersive uses
Value	0.055
Units	kg/d

Product characteristics

Physical form of product	Liquid
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Other operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	5%
Release fraction to wastewater from process (initial release prior to RMM)	5%

Release fraction to soil from process (initial release prior to RMM)	5%
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Operational conditions

Other	Assumes use at not more than 20°C above ambient temperature, unless stated differently
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Conditions and measures related to municipal sewage treatment plant

Removal efficiency (total)	87.5%
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Further information

Operational conditions	Indoor/Outdoor use
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Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	5%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee

personal protection, hygiene and health evaluation	training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
Covers concentrations up to	5%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

**Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
- ERC9b - Wide dispersive outdoor use of substances in closed systems**

Predicted No Effect Concentration (PNEC)

Freshwater	0.068 mg/l
Freshwater sediment	1.08 mg/kg dw
Marine water	0.0068 mg/l
Marine sediment	0.108 mg/kg dw
Soil	0.176 mg/kg dw
Impact on Sewage Treatment	23 mg/l
Intermittent release	1.36 mg/l

Calculation method Used CHESAR model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	1.72E-4 mg/l	<0.01
Freshwater sediment	2.74E-3 mg/kg dw	<0.01
Marine water	2.14E-5 mg/l	<0.01
Marine sediment	3.4E-4 mg/kg dw	<0.01
Soil	1.25E-3 mg/kg dw	<0.01
STP: Sewage Treatment Plant	1.72E-4 mg/l	<0.01

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	1.25 mg/kg bw/day
Worker - inhalative, long-term - local	10 mg/m ³
Worker - inhalative, long-term - systemic	4.4 mg/m ³
Worker - inhalative, short-term - local	10 mg/m ³
Consumer - oral, long-term - systemic	0.6 mg/kg bw/day
Consumer - dermal, long-term - systemic	0.6 mg/kg bw/day
Consumer - inhalative, long-term - systemic	1.1 mg/m ³

Calculation method	Used CHESAR 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 - systemic	0.264 mg/m ³	0.026
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.034 mg/kg b.w./d	0.027
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.274 mg/kg b.w./d	0.219
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg b.w./d	0.552
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	5.275 mg/m ³	0.527
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.549
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	3.956 mg/m ³	0.396
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.549 mg/kg b.w./d	0.439
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	3.165 mg/m ³	0.316
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC17 - Lubrication at high energy	Worker - dermal, long-term -	0.549 mg/kg b.w./d	0.439

conditions and in partly open process	systemic		
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - dermal, long-term - systemic	0.171 mg/kg b.w./d	0.137

Section 4 - Guidance to check compliance with the exposure scenario

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. 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.

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

Chemical name 3,5,5-TRIMETHYLHEXANOIC ACID
REACH registration number 01-2119517580-45-XXXX
CAS No 3302-10-1
EC No (EU Index No) 221-975-0
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
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 GBR

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

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in metal working fluids/rolling oils
Type Worker
Main user group Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8b - Wide dispersive indoor use of reactive substances in open systems
Process category(ies) 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)
 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
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC17 - Lubrication at high energy conditions and in partly open process
Sector(s) of use SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

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

Covers concentrations up to 100%
Amounts used

Type	Daily amount for wide dispersive uses
Value	0.066
Units	kg/d

Product characteristics

Physical form of product	Liquid
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Other operational conditions of use affecting environmental exposure

Release fraction to air from wide dispersive use (regional only)	100%
Release fraction to wastewater from wide dispersive use	100%
Release fraction to soil from wide	20%

dispersive use (regional only)	
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Operational conditions

Other	Assumes use at not more than 20°C above ambient temperature, unless stated differently
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Conditions and measures related to municipal sewage treatment plant

Removal efficiency (total)	87.5%
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Further information

Operational conditions	Indoor/Outdoor use
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Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

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	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	5%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	20%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%

Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
Covers concentrations up to	5%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 80%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Use suitable eye protection Wear a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

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

Predicted No Effect Concentration (PNEC)

Freshwater	0.068 mg/l
Freshwater sediment	1.08 mg/kg dw
Marine water	0.0068 mg/l
Marine sediment	0.108 mg/kg dw
Soil	0.176 mg/kg dw
Impact on Sewage Treatment	23 mg/l
Intermittent release	1.36 mg/l

Calculation method Used CHESAR model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	5.68E-4 mg/l	<0.01
Freshwater sediment	9.03E-3 mg/kg dw	<0.01
Marine water	6.1E-5 mg/l	<0.01
Marine sediment	9.7E-4 mg/kg dw	<0.01
Soil	2.32E-3 mg/kg dw	0.013
STP: Sewage Treatment Plant	4.13E-3 mg/l	<0.01

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	1.25 mg/kg bw/day
Worker - inhalative, long-term - local	10 mg/m ³
Worker - inhalative, long-term - systemic	4.4 mg/m ³
Worker - inhalative, short-term - local	10 mg/m ³
Consumer - oral, long-term - systemic	0.6 mg/kg bw/day
Consumer - dermal, long-term - systemic	0.6 mg/kg bw/day
Consumer - inhalative, long-term - systemic	1.1 mg/m ³

Calculation method Used CHESAR 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 - systemic	0.264 mg/m ³	0.026
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.034 mg/kg b.w./d	0.027
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.137 mg/kg b.w./d	0.11
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg b.w./d	0.552
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	3.165 mg/m ³	0.316
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	3.956 mg/m ³	0.396
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.549 mg/kg b.w./d	0.439
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.549 mg/kg b.w./d	0.439

Section 4 - Guidance to check compliance with the exposure scenario

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. 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.

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

Chemical name 3,5,5-TRIMETHYLHEXANOIC ACID
REACH registration number 01-2119517580-45-XXXX
CAS No 3302-10-1
EC No (EU Index No) 221-975-0
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

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

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in metal working fluids/rolling oils
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 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)
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC17 - Lubrication at high energy conditions and in partly open process
 PROC18 - Greasing at high energy conditions
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU14 - Manufacture of basic metals, including alloys

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

Covers concentrations up to 100%
Amounts used

Type	Daily amount per site
Value	6000
Units	kg/d

Type	Annual amount per site
Value	120

Units	t(ons)/year
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Product characteristics

Physical form of product	Liquid
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Other operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	100%
Release fraction to wastewater from process (initial release prior to RMM)	0.1%
Release fraction to soil from process (initial release prior to RMM)	5%

Operational conditions

Other	Assumes use at not more than 20°C above ambient temperature, unless stated differently
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Conditions and measures related to municipal sewage treatment plant

Assumed domestic sewage treatment plant flow	2000
Removal efficiency (total)	87.5%

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
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Control measures to prevent releases

Water	Acclimated biological treatment Efficiency of at least 99.9%
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Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 'basic' employee training Use suitable eye protection
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
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Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves (tested to EN 374) and eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee

personal protection, hygiene and health evaluation	training Use suitable eye protection Wear a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC10 - Roller application or brushing
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
Covers concentrations up to	10%
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Process category(ies)	PROC18 - Greasing at high energy conditions
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Local exhaust ventilation - 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 a respirator providing a minimum efficiency of 95%
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

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

Predicted No Effect Concentration (PNEC)

Freshwater	0.068 mg/l
Freshwater sediment	1.08 mg/kg dw
Marine water	0.0068 mg/l
Marine sediment	0.108 mg/kg dw
Soil	0.176 mg/kg dw
Impact on Sewage Treatment	23 mg/l
Intermittent release	1.36 mg/l

Calculation method Used CHESAR model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.038 mg/l	0.555
Freshwater sediment	0.6 mg/kg dw	0.555
Marine water	3.77E-3 mg/l	0.555
Marine sediment	0.06 mg/kg dw	0.556
Soil	0.121 mg/kg dw	0.688
STP: Sewage Treatment Plant	0.376 mg/l	0.016

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	1.25 mg/kg bw/day
Worker - inhalative, long-term - local	10 mg/m ³
Worker - inhalative, long-term - systemic	4.4 mg/m ³
Worker - inhalative, short-term - local	10 mg/m ³
Consumer - oral, long-term - systemic	0.6 mg/kg bw/day
Consumer - dermal, long-term - systemic	0.6 mg/kg bw/day
Consumer - inhalative, long-term - systemic	1.1 mg/m ³

Calculation method Used CHESAR 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 - systemic	0.264 mg/m ³	0.026
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.034 mg/kg b.w./d	0.027
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.274 mg/kg b.w./d	0.219
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.791 mg/m ³	0.079
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.69 mg/kg b.w./d	0.552
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548

and/or significant contact)			
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.659 mg/m ³	0.066
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	1.319 mg/m ³	0.132
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.549
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.582 mg/m ³	0.158
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	3.165 mg/m ³	0.316
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.823 mg/kg b.w./d	0.658
PROC18 - Greasing at high energy conditions	Worker - inhalative, long-term - systemic	2.637 mg/m ³	0.264
PROC18 - Greasing at high energy conditions	Worker - dermal, long-term - systemic	0.686 mg/kg b.w./d	0.548

Section 4 - Guidance to check compliance with the exposure scenario

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. 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.