Sulfole® 120B Mercaptan

Version 5.9 Revision Date 2023-08-14

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2020/878

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

1.1 Product identifier

Product information

Product Name : Sulfole® 120B Mercaptan
Material : 1116064, 1108796, 1105436, 1101538, 1101537

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
tert-Dodecanethiol	25103-58-6 246-619-1	Chevron Phillips Chemicals International NV 01-2119486132-42-0002
tert-Dodecanethiol	25103-58-6 246-619-1	Chevron Phillips Chemical Company LP 01-2119486132-42-0005

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

Relevant Identified Uses Supported : Manufacture
Formulation
Use in polymer processing –industrial
Lubricants - Industrial
Use in mining – industrial

1.3 Details of the supplier of the safety data sheet

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da Vincilaan 19
1831 Diegem
Belgium

SDS Requests: (800) 852-5530
Responsible Party: Product Safety Group
Email:sds@cpchem.com

1.4

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)
Belgium: 070 245 245 (24 hours/day, 7 days/week)
Bulgaria: +359 2 9154 233
Croatia: +3851 2348 342 (24 hours/day, 7 days/week)
Cyprus: 1401
Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402
Denmark: Danish Poison Center (Giftlinjen): +45 8212 1212
Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Finland: 0800 147 111 09 471 977 (24 hours/day)
France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)
Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Greece: (0030) 2107793777 (24 hours/day, 7 days/week)
Hungary: +36-80-201-199 (24 hours/day, 7 days/week)
Iceland: 543 2222 (24 hours/day, 7 days/week)
Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371 67042473. (24 hours.)
Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Lithuania: +370 (85) 2362052
Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)
Malta: +356 2395 2000
The Netherlands: NVIC: +31 (0)88 755 8000
Norway: 22 59 13 00 (24 hours/day, 7 days/week)
Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Portugal: CIAV phone number: +351 800 250 250
Romania: +40213183606
Slovakia: +421 2 5477 4166
Slovenia: Phone number: 112
Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)
Sweden: 112 – ask for Poisons Information

Responsible Department	:	Product Safety and Toxicology Group
E-mail address	:	SDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

2.1

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Long-term (chronic) aquatic hazard, Category 4	H413: May cause long lasting harmful effects to aquatic life.

2.2

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Warning

Hazard Statements	: H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H319	Causes serious eye irritation.
	H413	May cause long lasting harmful effects to aquatic life.
Precautionary Statements	: **Prevention:**	
	P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
	P264	Wash skin thoroughly after handling.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ eye protection/ face protection.
	Response:	
	P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
	P337 + P313	If eye irritation persists: Get medical advice/ attention.

Hazardous ingredients which must be listed on the label:
- 25103-58-6 tert-Dodecanethiol

2.3

Other hazards

Results of PBT and vPvB assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Endocrine disrupting properties	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 - 3.2
Substance or Mixture

Synonyms	:	TDM Tertiary Dodecyl Mercaptan
Molecular formula	:	C12H26S

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]	Specific Conc. Limits, M-factors and ATEs
tert-Dodecanethiol	25103-58-6 246-619-1	Skin Irrit. 2; H315 Skin Sens. 1B; H317 Aquatic Chronic 4; H413	98 - 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1
Description of first-aid measures

General advice	:	Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.
If inhaled	:	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

Notes to physician

Symptoms : No data available.

Risks : No data available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No data available.

SECTION 5: Firefighting measures

Flash point : 92°C (198°F)
Method: Tag closed cup

Autoignition temperature : No data available

5.1
Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO2).

Unsuitable extinguishing media : High volume water jet.

5.2
Special hazards arising from the substance or mixture

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

5.3
Advice for firefighters

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection : Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

6.1
Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment. Ensure adequate ventilation.

6.2
Environmental precautions

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3

Methods and materials for containment and cleaning up

Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4

Reference to other sections

Reference to other sections	:	For personal protection see section 8. For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1

Precautions for safe handling
Handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Advice on protection against fire and explosion	:	Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

7.2

Conditions for safe storage, including any incompatibilities

Storage

Requirements for storage areas and containers	:	No smoking. Keep in a well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

7.3

Specific End Use

Use	:	For additional details, see the Exposure Scenario in the Annex portion

SECTION 8: Exposure controls/personal protection

8.1

Control parameters

Chevron Phillips Chemical Company LP

Components	Basis	Value	Control parameters	Note
tert-Dodecanethiol	Manufacturer	TWA	0,1 ppm,	

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 0,5 mg/m3

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Long-term systemic effects
Value: 1,7 mg/kg

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Acute effects
Value: 0,665 mg/cm2

DNEL : End Use: Consumers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 0,09 mg/m3

DNEL : End Use: Consumers
Routes of exposure: Ingestion
Potential health effects: Long-term systemic effects
Value: 0,08 mg/kg

PNEC : Fresh water sediment
Value: 3 mg/kg

PNEC : Marine sediment
Value: 0,3 mg/kg

8.2

Exposure controls
Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as:. A positive

pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant protective clothing. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties

9.1

Information on basic physical and chemical properties

Appearance

Form	:	liquid
Physical state	:	liquid
Color	:	Colorless
Odor	:	Repulsive

Safety data

Flash point	:	92°C (198°F) Method: Tag closed cup
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	no
Autoignition temperature	:	No data available
Molecular formula	:	C12H26S
Molecular weight	:	202,44 g/mol
pH	:	No data available

Pour point	:	No data available
Boiling point/boiling range	:	234°C (453°F)
Vapor pressure	:	4,00 Pa at 24°C (75°F)
Relative density	:	0,8664 at 16 °C (61 °F)
Density	:	0,9 g/cm3
Water solubility	:	0,00393 mg/l Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	:	No data available
Viscosity, dynamic	:	4 mPa.s
Relative vapor density	:	3 (Air = 1.0)
Evaporation rate	:	1
Percent volatile	:	> 99 %

9.2

Other information

Conductivity	:	Not available

SECTION 10: Stability and reactivity

10.1

Reactivity	:	Stable under recommended storage conditions.

10.2

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3

Possibility of hazardous reactions

Hazardous reactions	:	Hazardous reactions: Hazardous polymerization does not occur. Hazardous reactions: Vapors may form explosive mixture with air.

10.4

Conditions to avoid	:	Heat, flames and sparks.

10.5

Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

10.6

Hazardous decomposition products : Carbon oxides
Sulfur oxides

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute oral toxicity

tert-Dodecanethiol : LD50: > 2.000 mg/kg
Species: Rat
Sex: female
Method: OECD Test Guideline 423

Acute inhalation toxicity

tert-Dodecanethiol : LC50: > 1,97 mg/l
Exposure time: 4 h
Species: Rat
Sex: male and female
Test atmosphere: vapor
Method: OECD Test Guideline 403
Information given is based on data obtained from similar substances.

Acute dermal toxicity

tert-Dodecanethiol : LD50: > 2.000 mg/kg
Species: Rat
Sex: male
Method: OECD Test Guideline 402
Information given is based on data obtained from similar substances.

Skin irritation

tert-Dodecanethiol : Skin irritation

Eye irritation

tert-Dodecanethiol : No eye irritation

Sensitization

tert-Dodecanethiol : The product is a skin sensitizer, sub-category 1B.

Repeated dose toxicity

tert-Dodecanethiol	:	Species: Rat, male Sex: male Application Route: Inhalation Dose: 0, 26, 98 ppm Exposure time: 4 wk Number of exposures: 6 h/d, 5 d/wk Lowest observable effect level: 26 ppm Method: OECD Test Guideline 412 Target Organs: Kidney, Liver

Species: Rat, female
Sex: female
Application Route: Inhalation
Dose: 0, 26, 98 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 26 ppm
Method: OECD Guideline 412
Target Organs: Liver, Kidney

Species: Dog, male and female
Sex: male and female
Application Route: Inhalation
Dose: 0, 25, 106 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 25 ppm
Lowest observable effect level: 109 ppm
Method: OECD Test Guideline 412
Target Organs: Liver

Species: Mouse, male and female
Sex: male and female
Application Route: Inhalation
Dose: 0, 25, 109 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
Lowest observable effect level: 25 ppm
Method: OECD Test Guideline 412
Target Organs: Liver

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg
Exposure time: 10 wk
Number of exposures: once daily
NOEL: 200 mg/kg
Method: OECD Guideline 422
Target Organs: Kidney, Liver

Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg
Exposure time: 8 - 9 wk
Number of exposures: once daily
NOEL: 200 mg/kg
Method: OECD Guideline 422
Target Organs: Liver

Species: Rat, male
Sex: male
Application Route: Inhalation
Dose: 5, 25, 100 ppm
Exposure time: 13 wk
Number of exposures: 6h/d, 5d/wk
NOEL: 25 ppm
Method: OECD Test Guideline 413

Species: Rat, female
Sex: female
Application Route: Inhalation
Dose: 5, 25, 100 ppm
Exposure time: 13 wk
Number of exposures: 6h/d, 5d/wk
NOEL: 25 ppm
Method: OECD Test Guideline 413

Genotoxicity in vitro

tert-Dodecanethiol : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Method: OECD Guideline 476
Result: negative

Test Type: Sister Chromatid Exchange Assay
Metabolic activation: with and without metabolic activation
Method: OECD Guideline 479
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo

tert-Dodecanethiol : Test Type: In vivo micronucleus test
Species: Mouse
Route of Application: Oral
Dose: 1250, 2500, 5000 mg/kg/bw
Method: Mutagenicity (micronucleus test)
Result: negative
Remarks: Information given is based on data obtained from similar substances.

Reproductive toxicity

tert-Dodecanethiol : Species: Rat
Sex: male
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg/d
Exposure time: 10 wk
Number of exposures: Daily
Method: OECD Guideline 422
NOAEL Parent: 200 mg/kg
Animal testing did not show any effects on fertility.

Species: Rat
Sex: female
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg/d
Exposure time: 8 - 9 wk
Number of exposures: Daily
Method: OECD Guideline 422
NOAEL Parent: 200 mg/kg
NOAEL F1: 100 mg/kg
Animal testing did not show any effects on fertility.
Reduced fetal weight.

Species: Rat
Sex: male
Application Route: oral gavage
Dose: 25, 75, 200 mg/kg/d
Exposure time: 18 wk
Number of exposures: Daily
Method: OECD Test Guideline 443
NOAEL Parent: 200 mg/kg
NOAEL F1: 200 mg/kg
NOAEL F2: 200 mg/kg
Animal testing did not show any effects on fertility.

Species: Rat
Sex: female
Application Route: oral gavage
Dose: 25, 75, 200 mg/kg/d
Exposure time: 16 - 18 wk
Number of exposures: Daily
Method: OECD Test Guideline 443
NOAEL Parent: 200 mg/kg
NOAEL F1: 200 mg/kg
NOAEL F2: 200 mg/kg
Animal testing did not show any effects on fertility.
Reduced fetal weight.

Developmental Toxicity

tert-Dodecanethiol : Species: Rat
Application Route: Inhalation
Dose: 0, 22.7, 88.6 ppm
Number of exposures: 6 hrs/d
Test period: GD 6-19
Method: OECD Guideline 414
NOAEL Teratogenicity: >= 88.6 ppm
No adverse effects expected

Species: Mouse
Application Route: Inhalation
Dose: 0, 22.7, 88.6 ppm
Number of exposures: 6 hrs/d
Test period: GD 6-19
Method: OECD Guideline 414
NOAEL Teratogenicity: >= 88.6 ppm
No adverse effects expected

Species: Rabbit
Application Route: oral gavage
Dose: 0, 50, 100, 200 mg/kg/d
Number of exposures: Daily
Test period: GD 6-28
Method: OECD Guideline 414
NOAEL Teratogenicity: 100 mg/kg
NOAEL Maternal: 100 mg/kg
Embryotoxic effects and adverse effects on the offspring were detected only at high maternally toxic doses

Sulfole® 120B Mercaptan
Aspiration toxicity : May be harmful if swallowed and enters airways.

Sulfole® 120B Mercaptan
Specific Target Organ Toxicity (Single Exposure) : Remarks: Not classified due to data which are conclusive although insufficient for classification. :

Sulfole® 120B Mercaptan
Specific Target Organ Toxicity (Repeated Exposure) : Remarks: Not classified due to data which are conclusive although insufficient for classification. :

CMR effects

tert-Dodecanethiol : Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: No toxicity to reproduction

11.2 Information on other hazards

Sulfole® 120B Mercaptan
Further information : Solvents may degrease the skin.
Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish

tert-Dodecanethiol : LL50: > 100 mg/l
Exposure time: 96 h
Species: Danio rerio (Zebra Fish)
static test Method: OECD Test Guideline 203
No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates

tert-Dodecanethiol : EC50: > 0,056 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
semi-static test Method: OECD Test Guideline 202
No toxicity at the limit of solubility.

Toxicity to bacteria

tert-Dodecanethiol : NOEC: 8,6 mg/l
Exposure time: 3 h
Growth rate
Respiration inhibition
Method: OECD Test Guideline 209

NOEC: > 10 mg/l
Exposure time: 3 h
Growth rate
Respiration inhibition
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

tert-Dodecanethiol : NOEC: 0,0108 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
semi-static test
Method: OECD Test Guideline 211
No toxicity at the limit of solubility.

12.2

Persistence and degradability

Biodegradability : This material is not expected to be readily biodegradable.

12.3

Bioaccumulative potential

Elimination information (persistence and degradability)

Bioaccumulation

tert-Dodecanethiol : Species: Danio rerio (zebra fish)
Exposure time: 15 d
Bioconcentration factor (BCF): > 500 - < 1.950
Method: OECD Test Guideline 305
Biomagnification factor <1

The product may be accumulated in organisms.

12.4

Mobility in soil

Mobility

tert-Dodecanethiol : After release, adsorbs onto soil.

12.5

Results of PBT and vPvB assessment

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6

Endocrine disrupting properties

Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7

Other adverse effects

Additional ecological information : May cause long lasting harmful effects to aquatic life.

12.8

Additional Information

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
tert-Dodecanethiol : No toxicity at the limit of solubility.

Long-term (chronic) aquatic hazard
tert-Dodecanethiol : May cause long lasting harmful effects to aquatic life.

SECTION 13: Disposal considerations

13.1

Waste treatment methods

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or

ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 14: Transport information

14.1 - 14.7

Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

NA1993, COMBUSTIBLE LIQUID, N.O.S., (TERT – DODECANETHIOL), III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN3334, AVIATION REGULATED LIQUID, N.O.S., (TERT – DODECANETHIOL), 9, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Other information	**:**	**tert- Dodecanethiol, S.T. 3, Cat.Y**

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information

15.1

Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Water hazard class (Germany) : WGK 2 water endangering

15.2

Chemical Safety Assessment

Components	:	tert-dodecanethiol	A Chemical Safety Assessment has been carried out for this substance.	246-619-1

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Dangerous for the environment
9a
Quantity 1: 100 t
Quantity 2: 200 t

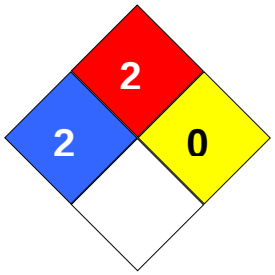
: ZEU_SEVES3 Update:
Not applicable

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Australia AIIC	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	All substances in this product were registered, notified to be registered, or exempted from registration by CPChem through an Only Representative according to K-REACH regulations. Importation of this product is permitted if the Korean Importer of Record was included on CPChem's notifications or if the Importer of Record themselves notified the substances.
Philippines PICCS	:	On the inventory, or in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 2
Reactivity Hazard: 0



Further information

Legacy SDS Number : CPC00490

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AIIC	Australian Inventory of Industrial Chemicals	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average

ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate

Full text of H-Statements referred to under sections 2 and 3.

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H413	May cause long lasting harmful effects to aquatic life.

Annex

1. Short title of Exposure Scenario: **Manufacture**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU3:** Industrial Manufacturing (all)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1:** Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for:ERC1: Manufacture of substances

Environment factors not influenced by risk management

Flow rate	:	0 m3/d
Remarks	:	Not relevant since there is no release to waste water (dry process).

Other given operational conditions affecting environmental exposure

Local release to the environment		
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0 %
Emission or Release Factor: Soil	:	0 %
Local release rate: Water	:	0 kg/day
Remarks	:	The waste of the substance is collected in a slop tank and treated as a waste by a dedicated contractor.
Local release rate: Air	:	0 kg/day
Remarks	:	Incineration of gases with efficiency 100%.
Local release rate: Soil	:	0 kg/day
Remarks	:	There is no direct exposure to soil.

Technical conditions and measures / Organizational measures

Remarks	:	Not applicable

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Effectiveness (of a measure)	:	0 %
Remarks	:	Not relevant since there is no release to waste water (dry process).

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics

Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Use product only in closed system.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, Yes, Carry out in a vented booth provided with laminar airflow. (Effectiveness: 99 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC1	EUSES		Marine sediment		0,0004866 mg/kg dry weight (d.w.)	< 0,01
			Sewage treatment plant		0 mg/L	< 0,01

ERC1: Manufacture of substances

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,035 mg/m3	0,071
			Worker – dermal, long-term – systemic	0,034 mg/kg/d	0,02
			Worker – long-term – systemic Combined routes		0,091

PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,118 mg/m3	0,236
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,397
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,295 mg/m3	0,59
			Worker – dermal, long-term – systemic	0,137 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,671
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,343 mg/kg/d	0,202
			Worker – long-term – systemic Combined routes		0,708
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,059 mg/m3	0,118
			Worker – dermal, long-term – systemic	0,068 mg/kg/d	0,04
			Worker – long-term – systemic Combined routes		0,158

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Formulation**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

		PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC2:** Formulation of preparations
Further information	:	Formulation of preparations for Gold Paint for glassware and ceramics.

2.1 Contributing scenario controlling environmental exposure for:ERC2: Formulation of preparations

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Local release to the environment		
Emission or Release Factor: Air	:	0,1 %
Emission or Release Factor: Water	:	0,3 %
Emission or Release Factor: Soil	:	0,01 %
Local release rate: Air	:	0,1 kg/day
Local release rate: Water	:	0,3 kg/day
Local release rate: Soil	:	0,01 kg/day

Technical conditions and measures / Organizational measures

Remarks	:	Sludge should be incinerated, contained or reclaimed.
Remarks	:	No application of sewage sludge to soil

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	96 %
Sludge Treatment	:	Not applicable

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 4 h

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Use product only in closed system.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 4 h

Human factors not influenced by risk management

Exposed skin area	:	Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 1 h

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor

Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC9: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use

Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC2	EUSES		Freshwater sediment		0,253 mg/kg dry weight (d.w.)	0,084
			Marine sediment		0,025 mg/kg dry weight (d.w.)	0,084
			Sewage treatment plant		0,006 mg/L	< 0,01

ERC2: Formulation of preparations

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,004 mg/m3	< 0,01
			Worker – dermal, long-term – systemic	0,003 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		< 0,01
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708

			Worker – dermal, long-term – systemic	0,027 mg/kg/d	0,016
			Worker – long-term – systemic Combined routes		0,724
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708
			Worker – dermal, long-term – systemic	0,014 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		0,716
PROC4, PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,137 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,587
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,007 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		0,51

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Use in polymer processing –industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU11:** Manufacture of rubber products
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC6d:** Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Further information	:	Chain Transfer Agent for the production of styrene butadiene latex for rubber and paper coating, nitrile rubber, acrylonitrile butadiene styrene (ABS) and also for the production of expandable polystyrene.

2.1 Contributing scenario controlling environmental exposure for:ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Environment factors not influenced by risk management

Flow rate	:	400.000 m3/d

Other given operational conditions affecting environmental exposure

Local release to the environment		
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,1 %
Emission or Release Factor: Soil	:	0,025 %
Local release rate: Water	:	2,5 kg/day
Local release rate: Air	:	0 kg/day

Technical conditions and measures / Organizational measures

Remarks	:	Sludge should be incinerated, contained or reclaimed.
Remarks	:	No application of sewage sludge to soil

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	10.000 m3/d
Effectiveness (of a measure)	:	96 %

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Use product only in closed system.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific

activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC9: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC6d	EUSES		Freshwater		0,106 mg/kg	0,035

			sediment		dry weight (d.w.)	
			Marine sediment		0,042 mg/kg dry weight (d.w.)	0,139
			Sewage treatment plant		0,01 mg/L	< 0,01

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,004 mg/m3	< 0,01
			Worker – dermal, long-term – systemic	0,003 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		< 0,01
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708
			Worker – dermal, long-term – systemic	0,027 mg/kg/d	0,016
			Worker – long-term – systemic Combined routes		0,724
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708
			Worker – inhalation, long-term – systemic	0,014 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		0,716
PROC4, PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,137 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,587
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,007 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		0,51

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Lubricants - Industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU0:** Other
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC6a:** Industrial use resulting in manufacture of another substance (use of intermediates)

2.1 Contributing scenario controlling environmental exposure for:ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Environment factors not influenced by risk management

Flow rate	:	400.000 m3/d

Other given operational conditions affecting environmental exposure

Local release to the environment

Emission or Release Factor: Air	:	0,001 %
Emission or Release Factor: Water	:	0,3 %
Emission or Release Factor: Soil	:	0,001 %

Local release rate: Air : 0,025 kg/day
Local release rate: Water : 7,5 kg/day

Technical conditions and measures / Organizational measures
Remarks : Sludge should be incinerated, contained or reclaimed.
Remarks : No application of sewage sludge to soil

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 10.000 m3/d
Sludge Treatment : Not applicable

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Use product only in closed system.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 15 min

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC6a	EUSES		Freshwater sediment		0,307 mg/kg dry weight (d.w.)	0,102
			Marine sediment		0,124 mg/kg dry weight (d.w.)	0,414
			Sewage treatment plant		0,031 mg/L	< 0,01

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,006 mg/m3	0,012
			Worker – dermal, long-term – systemic	0,034 mg/kg/d	0,02
			Worker – long-term – systemic Combined routes		0,032
PROC2	ECETOC TRA		Worker – inhalation,	0,006 mg/m3	0,012

	Modified		long-term – systemic		
			Worker – dermal, long-term – systemic	0,274 mg/kg	0,161
			Worker – long-term – systemic Combined routes		0,173
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,018 mg/m3	0,035
			Worker – dermal, long-term – systemic	0,138 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,117
PROC4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,03 mg/m3	0,059
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,404
			Worker – long-term – systemic Combined routes		0,463
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,059 mg/m3	0,118
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,403
			Worker – long-term – systemic Combined routes		0,521
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,015 mg/m3	0,03
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,403
			Worker – long-term – systemic Combined routes		0,433
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,03 mg/m3	0,059
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,404
			Worker – long-term – systemic Combined routes		0,463
PROC15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,03 mg/m3	0,059
			Worker – dermal, long-term – systemic	0,068 mg/kg/d	0,04
			Worker – long-term – systemic Combined routes		0,099

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Use in mining – industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU2a:** Mining, (without offshore industries)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental release category	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	Used effectively as a secondary/scavenger collector for base metal sulfides.

2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d

Other given operational conditions affecting environmental exposure

Local release to the environment		
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,1 %
Emission or Release Factor: Soil	:	0,025 %
Local release rate: Air	:	0 kg/day
Local release rate: Water	:	1 kg/day

Technical conditions and measures / Organizational measures

Remarks	:	Not applicable

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d

Effectiveness (of a measure) : 96 %

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Use product only in closed system.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 4 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Good general ventilation (3-5 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 1 h

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Good general ventilation (3-5 air changes per hour)

Technical conditions and measures

Closed batch process with occasional controlled exposure.
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 1 h

Human factors not influenced by risk management

Exposed skin area	:	Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 15 min

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures

Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation

Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

Physical Form (at time of use)	:	Liquid substance
Process Temperature	:	<= 40 °C

Frequency and duration of use

Exposure duration	:	< 1 h

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Remarks	:	Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid substance
Process Temperature : <= 40 °C

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Eye Protection,Yes,chemically resistant face shield, goggles, or safety glasses with side shields when there is potential for direct contact

Respiratory Protection, No (Effectiveness: 0 %)
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 80 %)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC6a	EUSES		Freshwater sediment		0,83 mg/kg dry weight (d.w.)	0,277
			Marine sediment		0,083 mg/kg dry weight (d.w.)	0,277
			Sewage		0,021 mg/L	< 0,01

			treatment plant			

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,004 mg/m3	< 0,01
			Worker – dermal, long-term – systemic	0,003 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		< 0,01
PROC2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708
			Worker – dermal, long-term – systemic	0,027 mg/kg/d	0,016
			Worker – long-term – systemic Combined routes		0,724
PROC3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,354 mg/m3	0,708
			Worker – dermal, long-term – systemic	0,014 mg/kg/d	< 0,01
			Worker – long-term – systemic Combined routes		0,716
PROC4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,137 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,587
PROC8a	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,235 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC8b	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,274 mg/kg/d	0,161
			Worker – long-term – systemic Combined routes		0,667
PROC9	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,253 mg/m3	0,506
			Worker – dermal, long-term – systemic	0,137 mg/kg/d	0,081
			Worker – long-term – systemic Combined routes		0,587

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable