



## Sulfolane - A Low Color

Version 3.0

Revision Date 2024-02-14

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 : Sulfolane - A Low Color  
 Material : 1128042, 1096434, 1069981, 1024655, 1024657, 1024658,  
 1024654, 1024659, 1024656

##### EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Sulfolane	126-33-0 204-783-1 016-031-00-8	Chevron Phillips Chemicals International NV 01-2119565139-32-0000
Sulfolane	126-33-0 204-783-1 016-031-00-8	Chevron Phillips Chemical Company LP 01-2119565139-32-0000

#### 1.2

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

Relevant Identified Uses Supported : Use as an aromatics extraction solvent - industrial  
 Use in acid gas purification – industrial  
 Formulation  
 Use as a cleaning agent – 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

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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 (Gifflinjen): +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: POISON CENTER MILAN – Azienda Ospedaliera Niguarda Ca` Grande Tel. +39 02 66101029; POISON CENTER ROME – Policlinico “Agostino Gemelli”, Servizio di tossicologia clinica Tel. +39 06 3054343; POISON CENTER ROME – Ospedale Pediatrico Bambino Gesù Tel. +39 06 68593726; POISON CENTER ROME – Policlinico “Umberto I” Tel. +39 06 4997 8000; POISON CENTER FOGGIA – Azienda Ospedaliera Universitaria Riuniti Tel. +39 0881 732326; POISON CENTER NAPLES – Azienda Ospedaliera “Antonio Cardarelli” Tel. +39 081 7472870; POISON CENTER FLORENCE – Azienda Ospedaliera universitaria Careggi Tel. +39 055 7947819; POISON CENTER PAVIA – IRCCS Fondazione Salvatore Maugeri Tel. +39 0382 24444; POISON CENTER BERGAMO – Azienda Ospedaliera “Papa Giovanni XXIII” Tel. 800 883 300; POISON CENTER VERONA – Azienda Ospedaliera Universitaria integrata Tel. 800 011 858;

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

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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**

Acute toxicity, Category 4

H302:

Harmful if swallowed.

Reproductive toxicity, Category 1B

H360FD:

May damage fertility. May damage the unborn child.

Specific target organ toxicity - repeated exposure, Category 2

H373:

May cause damage to organs through prolonged or repeated exposure.

**2.2****Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :



Signal Word :

Danger

Hazard Statements :

H302  
H360FD

Harmful if swallowed.

May damage fertility. May damage the unborn child.

H373

May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements :

**Prevention:**P201  
P260

Obtain special instructions before use.

Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264  
P280

Wash skin thoroughly after handling.

Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

**Response:**

P308 + P313

IF exposed or concerned: Get medical advice/ attention.

**Disposal:**

P501

Dispose of contents/ container to an approved waste disposal plant.

Hazardous ingredients which must be listed on the label:

- 126-33-0 Sulfolane

**Additional Labeling:**

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The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 1 %  
 The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 1 %

**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 : Sulfolane Anhydrous  
 Tetramethylene Sulfone  
 Sulfone

Molecular formula : C<sub>4</sub>H<sub>8</sub>SO<sub>2</sub>

**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
Sulfolane	126-33-0 204-783-1 016-031-00-8	Acute Tox. 4; H302 Repr. 1B; H360FD STOT RE 2; H373	99 - 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.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Induce vomiting immediately and call a physician. Keep

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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 : 166°C (331°F)  
Method: closed cup

Autoignition temperature : No data available

**5.1****Extinguishing media**

Unsuitable extinguishing media : High volume water jet.

**5.3****Advice for firefighters**

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

Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Fire and explosion protection : Normal measures for preventive fire protection.

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.

**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**

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Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). 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 : Do not breathe vapors/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

**7.2****Conditions for safe storage, including any incompatibilities****Storage**

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. 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
Sulfolane	Manufacturer	TWA	0,37 ppm,	

DNEL : End Use: Workers  
Routes of exposure: Dermal  
Potential health effects: Long-term systemic effects  
Value: 0,2 mg/kg

DNEL : End Use: Workers  
Routes of exposure: Inhalation  
Potential health effects: Long-term systemic effects  
Value: 2,16 mg/m3

DNEL : End Use: Consumers

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		Routes of exposure: Dermal Potential health effects: Long-term systemic effects Value: 0,015 mg/kg
DNEL	:	End Use: Consumers Routes of exposure: Inhalation Potential health effects: Long-term systemic effects Value: 0,3 mg/m3
PNEC	:	Fresh water Value: 0,1 mg/l
PNEC	:	Marine water Value: 0,01 mg/l
PNEC	:	Fresh water sediment Value: 0,39 mg/kg
PNEC	:	Marine sediment Value: 0,039 mg/kg
PNEC	:	Soil Value: 0,02 mg/kg

**8.2****Exposure controls****Engineering measures**

Adequate ventilation to control airborne 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.

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- 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:. Protective suit. Safety shoes.
- 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 : Clear
- Odor : Mild

**Safety data**

- Flash point : 166°C (331°F)  
Method: closed cup
- Lower explosion limit : No data available
- Upper explosion limit : No data available
- Oxidizing properties : No
- Autoignition temperature : No data available
- Molecular formula : C<sub>4</sub>H<sub>8</sub>SO<sub>2</sub>
- Molecular weight : 120,18 g/mol
- pH : Not applicable
- Freezing point : 26°C (79°F)
- Pour point : No data available
- Boiling point/boiling range : 282-288°C (540-550°F)
- Vapor pressure : 1,14 MMHG  
at 37,8°C (100,0°F)
- Relative density : 1,26  
at 30 °C (86 °F)
- Density : 1,26 G/ML



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Water solubility	: Miscible
Partition coefficient: n-octanol/water	: log Pow: 0 at 20°C (68°F)
Viscosity, kinematic	: No data available
Relative vapor density	: 3 (Air = 1.0)
Evaporation rate	: 1
Percent volatile	: > 99 %

**9.2****Other information**

Conductivity	: No data available
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**SECTION 10: Stability and reactivity****10.1**

<b>Reactivity</b>	: Stable under recommended storage conditions.
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**10.2**

<b>Chemical stability</b>	: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
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**10.3****Possibility of hazardous reactions**

<b>Hazardous reactions</b>	: Hazardous reactions: Hazardous polymerization does not occur.
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**10.4**

<b>Conditions to avoid</b>	: No data available.
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**10.5**

<b>Materials to avoid</b>	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
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**10.6**

<b>Hazardous decomposition products</b>	: Carbon oxides Sulfur oxides
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<b>Other data</b>	: No decomposition if stored and applied as directed.
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**SECTION 11: Toxicological information****11.1****Information on toxicological effects**

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**Acute oral toxicity**

Sulfolane : LD50: 2.068 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 401

**Acute inhalation toxicity**

Sulfolane : LC50: > 12000 mg/m<sup>3</sup> Exposure time: 4 h  
Species: Rat  
Sex: male and female  
Test atmosphere: vapor  
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

**Acute dermal toxicity**

Sulfolane : LD50: > 2.000 mg/kg  
Species: Rat  
Method: Directive 67/548/EEC, Annex V, B.3.

**Skin irritation**

Sulfolane : No skin irritation

**Eye irritation**

Sulfolane : No eye irritation

**Sensitization**

Sulfolane : Did not cause sensitization on laboratory animals.

**Repeated dose toxicity**

Sulfolane : Species: Rat, male  
Sex: male  
Application Route: oral gavage  
Dose: 60, 200, 700 mg/kg bw/day  
Exposure time: 28 d  
Number of exposures: daily  
NOEL: 60 mg/kg  
Target Organs: Kidney

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Species: Rat, female  
 Sex: female  
 Application Route: oral gavage  
 Dose: 60, 200, 700 mg/kg bw/day  
 Exposure time: 28 d  
 Number of exposures: Daily  
 NOEL: 200 mg/kg  
 Lowest observable effect level: 700 mg/kg

Species: Rat  
 Application Route: Inhalation  
 Dose: 2.8, 4.0, 20 mg/m<sup>3</sup>  
 Exposure time: 90-110 days  
 Number of exposures: 23 hrs/d, 7d/wk  
 NOEL: 20 mg/m<sup>3</sup>

Species: Guinea pig  
 Application Route: Inhalation  
 Dose: 4.0, 20, 159, 200 mg/m<sup>3</sup>  
 Exposure time: 90-110 days  
 Number of exposures: 23 hrs/d, 7 d/wk  
 NOEL: 159 mg/m<sup>3</sup>  
 Target Organs: Lungs, Blood, Liver

Species: Rat, male  
 Sex: male  
 Application Route: oral (drinking water)  
 Dose: 2.1, 8.8, 35, 131.7 mg/kg/d  
 Exposure time: 13 wk  
 Number of exposures: Daily  
 NOEL: 8,8 mg/kg  
 Method: OECD Test Guideline 408  
 Target Organs: Kidney

Species: Rat, female  
 Sex: female  
 Application Route: oral (drinking water)  
 Dose: 2.9, 10.6, 42, 191.1 mg/kg/d  
 Exposure time: 13 wk  
 Number of exposures: Daily  
 NOEL: 2,9 mg/kg  
 Method: OECD Test Guideline 408  
 Target Organs: Immune system

Species: Rat, male and female  
 Sex: male and female  
 Application Route: oral gavage  
 Dose: 80, 200, 500 mg/kg  
 Exposure time: 100 d  
 Number of exposures: Daily  
 NOEL: 200 mg/kg  
 Method: OECD Test Guideline 443  
 Target Organs: Immune system

**Genotoxicity in vitro**

Sulfolane

: Test Type: Ames test  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 471

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Result: negative

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

Test Type: Sister Chromatid Exchange Assay  
 Metabolic activation: with and without metabolic activation  
 Result: negative

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

Test Type: Mouse lymphoma assay  
 Metabolic activation: with and without metabolic activation  
 Method: OECD Test Guideline 490  
 Result: negative

**Reproductive toxicity**

Sulfolane

: Species: Rat  
 Sex: female  
 Application Route: oral gavage  
 Dose: 60, 200, 700 mg/kg  
 Number of exposures: Daily  
 Test period: 2 wk pre mating to lactation D4  
 Method: OECD Guideline 421  
 NOAEL Parent: 200 mg/kg bw/day  
 NOAEL F1: 60 mg/kg bw/day  
 Decrease birth index and number of pups

Species: Rat  
 Sex: male  
 Application Route: oral gavage  
 Dose: 80, 200, 500 mg/kg/d  
 Number of exposures: Daily  
 Method: OECD Test Guideline 443  
 NOAEL Parent: 200 mg/kg/d  
 NOAEL F1: 200 mg/kg/d  
 reduced fertility in male

Species: Rat  
 Sex: female  
 Application Route: oral gavage  
 Dose: 80, 200, 500 mg/kg/d  
 Number of exposures: Daily  
 Method: OECD Test Guideline 443  
 NOAEL Parent: 200 mg/kg/d  
 NOAEL F1: 200 mg/kg/d  
 Decrease birth index and number of pups

**Developmental Toxicity**

Sulfolane

: Species: Rat  
 Application Route: oral gavage  
 Dose: 60, 200, 700 mg/kg

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Number of exposures: Daily  
 Test period: 2 wk pre mating to lactation D4  
 NOAEL Teratogenicity: 60 mg/kg bw/day  
 NOAEL Maternal: 200 mg/kg bw/day

Species: Rat  
 Application Route: oral gavage  
 Dose: 100, 200, 500 mg/kg/day  
 Number of exposures: Daily  
 Test period: GD 1 - 19  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity: 200 mg/kg  
 NOAEL Maternal: 100 mg/kg  
 May damage the unborn child.

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**Aspiration toxicity** : No aspiration toxicity classification.

**Acute effects**

Sulfolane : Harmful if swallowed.

**Specific Target Organ Toxicity (Repeated Exposure)**

Sulfolane : Target Organs: Immune system  
 Assessment: May cause damage to organs through prolonged or repeated exposure.

**CMR effects**

Sulfolane : Carcinogenicity: Not available  
 Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.  
 Reproductive toxicity: Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

**11.2****Information on other hazards****Sulfolane - A Low Color**

**Further information** : No data available.  
 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**

Sulfolane : LC50: > 100 mg/l  
 Exposure time: 96 h  
 Species: *Oryzias latipes* (Orange-red killifish)

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static test Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**

Sulfolane : EC50: 852 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 static test Method: OECD Test Guideline 202

**Toxicity to algae**

Sulfolane : EC50: 500 mg/l  
 Exposure time: 72 h  
 Species: Pseudokirchneriella subcapitata (green algae)  
 Method: OECD Test Guideline 201

NOEC: 171 mg/l  
 Exposure time: 72 h  
 Species: Pseudokirchneriella subcapitata (green algae)  
 Method: OECD Test Guideline 201

**12.2****Persistence and degradability**

## Biodegradability

Sulfolane : Result: Not readily biodegradable.  
 10,1 %  
 Testing period: 14 d  
 Method: OECD Test Guideline 301C

**12.3****Bioaccumulative potential**

## Bioaccumulation

Sulfolane : Species: Cyprinus carpio (Carp)  
 Bioconcentration factor (BCF): < 1,3  
 This material is not expected to bioaccumulate.

**12.4****Mobility in soil**

## Mobility

Sulfolane : Groundwater contamination is possible.

**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**

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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 : This material is not expected to be harmful to aquatic organisms.

No data available

**12.8****Additional Information****Ecotoxicology Assessment**

Short-term (acute) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

Long-term (chronic) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

**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 : Do not dispose of waste into sewer. 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.

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

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bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

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

**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)**

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

**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.

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** : tetrahydrothiophene 1,1-dioxide A Chemical Safety Assessment 204-783-1 has been carried out for this substance.



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**Major Accident Hazard Legislation** : 96/82/EC Update: 2003  
Directive 96/82/EC does not apply

: 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

Canada DSL : All components of this product are on the Canadian DSL

Australia AIC : 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.

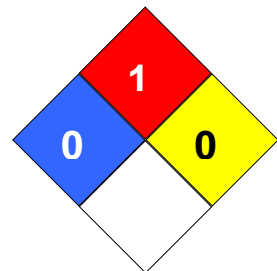
Philippines PICCS : On the inventory, or in compliance with the inventory

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: 0  
Fire Hazard: 1  
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : 646050

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

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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.**

H302	Harmful if swallowed.
H360FD	May damage fertility. May damage the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

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**Annex****1. Short title of Exposure Scenario: Use as an aromatics extraction solvent - industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU8, SU9:</b> Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC1, ERC4, ERC6a:</b> Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)
Further information	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities

**2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4, ERC6a: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)****Product characteristics**

Viscosity, dynamic : 10,34 mPa.s at 30 °C

(Msafe) : 200 kg/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d

Dilution Factor (River) : 10

Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 300

Emission or Release Factor: Air : 0,001 %

Emission or Release Factor: Water : 1 %

Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of

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Remarks : (%) (Effectiveness: > 90 %)  
 : Prevent environmental discharge consistent with regulatory requirements.  
 Water : No onsite wastewater treatment prior to discharge to sewage treatment plant.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Percentage removed from waste water : 0 %  
 Procedures to limit air emissions from Sewage Treatment Plant : No data available  
 Remarks : Domestic sewage treatment is not assumed.

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

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**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  
 Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

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Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

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

Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.

**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  
Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

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

Wear suitable gloves tested to EN374.

**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, ERC4, ERC6a	EUSES		Freshwater		0,0893 mg/L	0,9
			Marine water		0,00894 mg/L	0,9
			Freshwater sediment		0,0764 mg/kg	0,9
			Marine sediment		0,00764 mg/kg	0,9
			Soil		0,00149 mg/kg	0,083

ERC1: Manufacture of substances

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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

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**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,70 ppm	0,4
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,77
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,30 ppm	0,2
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,26
PROC8a, CS39	ECETOC TRA		Worker – inhalation, long-term – systemic	0,21 ppm	0,1
			Worker – dermal, long-term – systemic	2,74 mg/kg/d	0,8
			Worker – long-term – systemic Combined routes		0,90
PROC8b, CS14, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,05 ppm	0,6
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,97

PROC1: Use in closed process, no likelihood of exposure  
 CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure  
 CS15: General exposures (closed systems)  
 CS67: Storage

PROC15: Use as laboratory reagent  
 CS36: Laboratory activities

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
 CS14: Bulk transfers  
 CS39: Equipment cleaning and maintenance

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

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Confirm that RMMs and OCs are as described or of equivalent efficiency.  
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

Confirm that RMMs and OCs are as described or of equivalent efficiency.  
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

**1. Short title of Exposure Scenario: Use in acid gas purification – industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU8, SU9:</b> Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC1, ERC4, ERC6a:</b> Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)
Further information	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities

**2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4, ERC6a: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)****Product characteristics**

Viscosity, dynamic : 10,34 mPa.s at 30 °C

(Msafe) : 200 kg/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d

Dilution Factor (River) : 10

Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 300

Emission or Release Factor: Air : 0,001 %

Emission or Release Factor: Water : 1 %

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Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: &gt; 90 %)

Remarks : Prevent environmental discharge consistent with regulatory requirements.

Water : No onsite wastewater treatment prior to discharge to sewage treatment plant.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Percentage removed from waste water : 0 %

Procedures to limit air emissions from Sewage Treatment Plant : No data available

Remarks : Domestic sewage treatment is not assumed.

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

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance

Vapor pressure : &gt; 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**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

Vapor pressure : &gt; 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**



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Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

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

Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.

**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  
Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

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

Wear suitable gloves tested to EN374.

**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, ERC4, ERC6a	EUSES		Freshwater		0,0893 mg/L	0,9
			Marine water		0,00894 mg/L	0,9
			Freshwater sediment		0,0764 mg/kg	0,9
			Marine sediment		0,00764 mg/kg	0,9
			Soil		0,00149 mg/kg	0,083

ERC1: Manufacture of substances

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ERC4: Industrial use of processing aids in processes and products, not becoming part of articles  
 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, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,70 ppm	0,4
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,77
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,30 ppm	0,2
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,26
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,21 ppm	0,1
			Worker – dermal, long-term – systemic	2,74 mg/kg/d	0,8
			Worker – long-term – systemic Combined routes		0,90
PROC8b, CS14, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,05 ppm	0,6
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,97

PROC1: Use in closed process, no likelihood of exposure  
 CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure  
 CS15: General exposures (closed systems)  
 CS67: Storage

PROC15: Use as laboratory reagent  
 CS36: Laboratory activities

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
 CS14: Bulk transfers  
 CS39: Equipment cleaning and maintenance

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.  
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

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

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises : PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletization <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC2:</b> Formulation of preparations
Further information	:	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

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

Viscosity, dynamic	:	10,34 mPa.s at 30 °C
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (MSafe)	:	
Remarks	:	Not applicable

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**Technical conditions and measures / Organizational measures**

Remarks : Not applicable

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent****Product characteristics**Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 0,5 kPa**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**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  
Vapor pressure : > 0,5 kPa**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC8b, PROC9, PROC14: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of preparations or**

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**articles by tableting, compression, extrusion, pelletization****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374.

**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  
 Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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**3. Exposure estimation and reference to its source****Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,00 ppm	0,5
			Worker – dermal, long-term – systemic	1,34 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,93
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,5 ppm	0,8
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,92
PROC3, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,59
PROC4, CS55	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC9, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC14, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,69
PROC8a, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,84 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined		0,85

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routes

PROC1: Use in closed process, no likelihood of exposure  
CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure  
CS15: General exposures (closed systems)

PROC15: Use as laboratory reagent  
CS36: Laboratory activities

PROC3: Use in closed batch process (synthesis or formulation)  
CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
CS55: Batch process

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
CS14: Bulk transfers

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
CS4: Dipping, immersion and pouring

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletization  
CS4: Dipping, immersion and pouring

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
CS14: Bulk transfers

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.  
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

**1. Short title of Exposure Scenario: Use as a cleaning agent – industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	<p><b>PROC1:</b> Use in closed process, no likelihood of exposure</p> <p><b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure</p> <p><b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p><b>PROC7:</b> Industrial spraying</p> <p><b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p><b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p><b>PROC10:</b> Roller application or brushing</p>

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**PROC13:** Treatment of articles by dipping and pouringEnvironmental release category : **ERC4:** Industrial use of processing aids in processes and products, not becoming part of articlesFurther information :  
Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.**2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles****Product characteristics**

Viscosity, dynamic : 10,34 mPa.s at 30 °C

(Msafe) : 396 kg/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d

Dilution Factor (River) : 10

Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 300

Emission or Release Factor: Air : 30 %

Emission or Release Factor: Water : 0,01 %

Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: &gt; 70 %)

Remarks : Prevent environmental discharge consistent with regulatory requirements.

Water : No onsite wastewater treatment prior to discharge to sewage treatment plant.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Percentage removed from waste water : 0 %

Procedures to limit air emissions from Sewage Treatment Plant : No data available

Remarks : Domestic sewage treatment is not assumed.

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

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2: Use in**



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**closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

**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  
Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

**2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 0,5 kPa

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**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation.

**Conditions and measures related to personal protection, hygiene and health evaluation**Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
Wear a full face respirator conforming to EN140 with Type A filter or better.**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  
Vapor pressure : > 0,5 kPa**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC10, PROC13: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring****Product characteristics**

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Physical Form (at time of use) : Liquid substance  
 Vapor pressure : > 0,5 kPa

**Amount used**

Remarks : Not applicable

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid carrying out operation for more than 4 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

**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):
ERC4	EUSES		Freshwater		0,00137 mg/L	0,014
			Marine water		0,000136 mg/L	0,014
			Freshwater sediment		0,00117 mg/kg	0,014
			Marine sediment		0,000116 mg/kg	0,014
			Soil		0,00794 mg/kg	0,45

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,00 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,94

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PROC4, CS55	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,69
PROC7, CS10	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,60 ppm	0,3
			Worker – dermal, long-term – systemic	2,14 mg/kg/d	0,6
			Worker – long-term – systemic Combined routes		0,94
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC8a, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,20 ppm	0,7
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,85
PROC10, CS51	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,60 ppm	0,3
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,72
PROC13, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,20 ppm	0,7
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,85

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

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

CS15: General exposures (closed systems)

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

CS55: Batch process

PROC7: Industrial spraying

CS10: Spraying

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

CS14: Bulk transfers

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

CS14: Bulk transfers

PROC10: Roller application or brushing

CS51: Rolling, Brushing

PROC13: Treatment of articles by dipping and pouring

CS4: Dipping, immersion and pouring

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.  
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1