SAFETY DATA SHEET

Ethyl Mercaptan
Version 2.6
Revision Date 2018-04-02

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

Product information
Product Name: Ethyl Mercaptan
Material: 1118972, 1111485, 1024772, 1086422, 1086423, 1021429, 1021431, 1021426, 1021430, 1021425, 1021424, 1024773, 1024771, 1024770, 1021427, 1026776, 1021428, 1104918

EC-No.Registration number

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index No.</th>
<th>Legal Entity Registration number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>75-08-1</td>
<td>200-837-3</td>
<td>016-022-00-9</td>
<td>Chevron Phillips Chemicals International NV 01-2119491286-30-0000</td>
</tr>
</tbody>
</table>

Relevant Identified Uses: Manufacture
Distribution
Use as an intermediate
Formulation
Injection as odorant in fuels – industrial

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

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

SDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email:sds@cpchem.com

Emergency telephone:

Health:
SECTION 2: Hazards identification

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

- Flammable liquids, Category 1: H224: Extremely flammable liquid and vapor.
- Acute toxicity, Category 4: H302: Harmful if swallowed.
- Acute toxicity, Category 4: H332: Harmful if inhaled.
- Skin sensitization, Sub-category 1B: H317: May cause an allergic skin reaction.
- Acute aquatic toxicity, Category 1: H400: Very toxic to aquatic life.
- Chronic aquatic toxicity, Category 1: H410: Very toxic to aquatic life with long lasting effects.

Label elements
Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms:
- Flammable
- Poisoning
- Haemotoxic

Signal Word: Danger

Hazard Statements:
- H224: Extremely flammable liquid and vapor.
- H302: Harmful if swallowed.
- H317: May cause an allergic skin reaction.
- H332: Harmful if inhaled.
- H400: Very toxic to aquatic life.
- H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements:
Prevention:
- P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233: Keep container tightly closed.
- P240: Ground/bond container and receiving equipment.
- P243: Take precautionary measures against static discharge.
- P273: Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.

**Storage:**
P403 + P235 Store in a well-ventilated place. Keep cool.

**Disposal:**
P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous ingredients which must be listed on the label:
- 75-08-1 Ethyl Mercaptan

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

### SECTION 3: Composition/information on ingredients

**Synonyms**
- ETSH
- Ethanethiol
- Ethyl Mercaptan

**Molecular formula**
C2H6S

**Mixtures**

**Hazardous ingredients**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. EC-No. Index No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration [wt%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>75-08-1 200-837-3 016-022-00-9</td>
<td>Flam. Liq. 1; H224 Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Sens. 1B; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410</td>
<td>99</td>
</tr>
</tbody>
</table>

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

### SECTION 4: First aid measures

**General advice**
Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance.
**Ethyl Mercaptan**

**Version 2.6**

**Revision Date 2018-04-02**

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Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

- **If inhaled**: Call a physician or poison control center immediately. If unconscious, place in recovery position and seek medical advice.

- **In case of skin contact**: 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. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

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### SECTION 5: Firefighting measures

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>-48 °C (-54 °F)</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>295 °C (563 °F)</td>
</tr>
<tr>
<td>Suitable extinguishing media</td>
<td>Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.</td>
</tr>
<tr>
<td>Unsuitable extinguishing media</td>
<td>High volume water jet.</td>
</tr>
<tr>
<td>Specific hazards during firefighting</td>
<td>Do not allow run-off from fire fighting to enter drains or water courses.</td>
</tr>
<tr>
<td>Special protective equipment for firefighters</td>
<td>Wear self-contained breathing apparatus for firefighting if necessary.</td>
</tr>
<tr>
<td>Further information</td>
<td>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 containers. Use a water spray to cool fully closed containers.</td>
</tr>
<tr>
<td>Fire and explosion protection</td>
<td>Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides. Sulfur oxides.</td>
</tr>
</tbody>
</table>

---

### SECTION 6: Accidental release measures

**Personal precautions**: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate
personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

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.

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).

SECTION 7: Handling and storage

Handling

Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers: Prevent unauthorized access. No smoking. Keep container tightly closed in a dry and 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.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>SK</th>
<th>Zložky</th>
<th>Podstata</th>
<th>Hodnota</th>
<th>Kontrolné parametre</th>
<th>Poznámka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>SK OEL</td>
<td>NPEL priemerný</td>
<td>0,5 ppm, 1,3 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Mercaptan</td>
<td>SK OEL</td>
<td>NPEL krátkodobý</td>
<td>1 ppm, 2,6 mg/m³</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>SI</th>
<th>Sestavine</th>
<th>Osnova</th>
<th>Vrednost</th>
<th>Parametri nadzora</th>
<th>Pripomba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>SI OEL</td>
<td>MV</td>
<td>0,5 ppm, 1,3 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PT</th>
<th>Componentes</th>
<th>Bases</th>
<th>Valor</th>
<th>Parâmetros de controlo</th>
<th>Nota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>PT OEL</td>
<td>VLE-MP</td>
<td>0,5 ppm,</td>
<td>imitação do TRS, afeição do SNC, afeição do sistema nervoso central, imitação do trato respiratório superior</td>
<td></td>
</tr>
</tbody>
</table>
## Ethyl Mercaptan

**SAFETY DATA SHEET**

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### TRS

| Ethyl Mercaptan | PL NDS | NDS | 1 mg/m³ | | | | 1 mg/m³ |
|-----------------|--------|-----|---------|----------|-----------------|---|

### NO

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>FOR-2011-12-06-1358</th>
<th>TWA</th>
<th>0.5 ppm, 1 mg/m³</th>
</tr>
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</table>

### LV

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>LV OEL</th>
<th>AER 8 at</th>
<th>1 mg/m³</th>
</tr>
</thead>
</table>

### LT

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>LT OEL</th>
<th>IPRD</th>
<th>1 mg/m³</th>
<th></th>
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</thead>
</table>

### IE

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>IE OEL</th>
<th>OELV - 8 hrs (TWA)</th>
<th>0.5 ppm, 1 mg/m³</th>
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### HU

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>HU OEL</th>
<th>AK-érték</th>
<th>1 mg/m³</th>
<th></th>
</tr>
</thead>
</table>

### GR

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>GB EH40</th>
<th>TWA</th>
<th>0.5 ppm, 1.3 mg/m³</th>
</tr>
</thead>
</table>

### GB

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>GB EH40</th>
<th>STEL</th>
<th>2 ppm, 5.2 mg/m³</th>
</tr>
</thead>
</table>

### FR

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>FR VLE</th>
<th>VME</th>
<th>0.5 ppm, 1 mg/m³</th>
<th>normal</th>
</tr>
</thead>
</table>

### FI

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>FI OEL</th>
<th>HTP-arvot 15 min</th>
<th>0.5 ppm, 1.3 mg/m³</th>
</tr>
</thead>
</table>

### ES

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>ES VLA</th>
<th>VLA-ED</th>
<th>0.5 ppm, 1.3 mg/m³</th>
</tr>
</thead>
</table>

### EE

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>EE OEL</th>
<th>Piirnorm</th>
<th>0.5 ppm, 1 mg/m³</th>
<th></th>
</tr>
</thead>
</table>

### DK

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>DK OEL</th>
<th>GV</th>
<th>0.5 ppm, 1 mg/m³</th>
<th></th>
</tr>
</thead>
</table>

### DE

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>DE TRGS 900</th>
<th>AGW</th>
<th>0.5 ppm, 1.3 mg/m³</th>
<th>DFG</th>
</tr>
</thead>
</table>

### CH

<table>
<thead>
<tr>
<th>Ethyl Mercaptan</th>
<th>DE TRGS 900</th>
<th>AGW</th>
<th>0.5 ppm, 1.3 mg/m³</th>
<th>DFG</th>
</tr>
</thead>
</table>

**SDS Number:**100000068740 6/25
**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**

Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material.
Ethyl Mercaptan

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material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, 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: Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Flame retardant protective clothing. Workers should wear antistatic footwear.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance
Form: Liquid
Physical state: Liquid
Color: Colorless
Odor: Repulsive

Safety data
Flash point: -48 °C (-54 °F)
Lower explosion limit: 2,8 %(V)
Upper explosion limit: 18 %(V)
Oxidizing properties: No
Autoignition temperature: 295 °C (563 °F)
Molecular formula: C2H6S
Molecular weight: 62,14 g/mol
pH: Not applicable
Ethyl Mercaptan

Pour point: No data available

Boiling point/boiling range: 35 °C (95 °F)

Vapor pressure: 16,20 PSI at 37,8 °C (100,0 °F)

Relative density: 0,84 at 15,6 °C (60,1 °F)

Water solubility: Negligible

Partition coefficient: n-octanol/water: No data available

Viscosity, kinematic: No data available

Relative vapor density: 2,1 (Air = 1.0)

Evaporation rate: 1

Percent volatile: > 99 %

SECTION 10: Stability and reactivity

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

Possibility of hazardous reactions

Conditions to avoid: Heat, flames and sparks.

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

Hazardous decomposition products: Carbon oxides
Sulfur oxides

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

SECTION 11: Toxicological information

Acute oral toxicity

Ethyl Mercaptan: LD50: 682 mg/kg
Species: Rat
Sex: male
Method: Fixed Dose Method

Acute inhalation toxicity
Ethyl Mercaptan

Skin irritation

- Ethyl Mercaptan: Mild skin irritation

Eye irritation

- Ethyl Mercaptan: Mild eye irritation

Sensitization

- Ethyl Mercaptan: The product is a skin sensitizer, sub-category 1B. Information given is based on data obtained from similar substances.

Repeated dose toxicity

- Ethyl Mercaptan: Species: Rat, Male and female
  Sex: Male and female
  Application Route: Inhalation
  Dose: 0, 25, 100, 400 ppm
  Exposure time: 13 wks
  Number of exposures: 6 hr/d, 5 d/wk
  NOEL: 100 ppm
  Lowest observable effect level: 400 ppm
  Method: OECD Guideline 413
  Information given is based on data obtained from similar substances.

- Ethyl Mercaptan: Species: Rat, Male and female
  Sex: Male and female
  Application Route: Oral
  Dose: 0, 10, 50, 200 mg/kg
  Exposure time: 42-53 days
  NOEL: 50 mg/kg
  Method: OECD Guideline 422
  Information given is based on data obtained from similar substances.

Reproductive toxicity

- Ethyl Mercaptan: Species: Rat
  Sex: male and female
  Application Route: Oral diet
  Dose: 0, 10, 50, 200 mg/kg
  Exposure time: 42-53 days
  Number of exposures: once daily
  Method: OECD Guideline 422
  NOAEL Parent: 200 mg/kg
  NOAEL F1: 50 mg/kg
  Information given is based on data obtained from similar substances.

Developmental Toxicity
Ethyl Mercaptan

Species: Rat  
Application Route: Inhalation  
Dose: 0, 0.037, 0.28, or 0.56 mg/L  
Number of exposures: 6 hrs/d  
Test period: GD 6-19  
Method: OECD Guideline 414  
NOAEL Teratogenicity: > 0.56 mg/l  
Information given is based on data obtained from similar substances.

Species: Rat  
Application Route: Inhalation  
Dose: 0, 10, 100, 200 ppm  
Number of exposures: 6 hrs/d  
Test period: GD 6-19  
Method: OECD Guideline 414  
NOAEL Teratogenicity: > 200 ppm  
NOAEL Maternal: > 200 ppm  
Information given is based on data obtained from similar substances.

Aspiration toxicity
Ethyl Mercaptan:  
May be harmful if swallowed and enters airways.

CMR effects
Ethyl Mercaptan:  
Carcinogenicity: Not available  
Mutagenicity: Not mutagenic in Ames Test.  
Teratogenicity: Animal testing did not show any effects on fetal development.  
Reproductive toxicity: Animal testing did not show any effects on fertility.

Further information:  
Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish
Ethyl Mercaptan:  
2.4 mg/l  
Exposure time: 96 h  
Species: Oncorhynchus mykiss (rainbow trout)  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
Ethyl Mercaptan:  
EC50: < 0.1 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)  
static test Method: OECD Test Guideline 202

Toxicity to algae
Ethyl Mercaptan:  
EC50: 3 mg/l
**Ethyl Mercaptan**

**Exposure time:** 72 h  
Species: Pseudokirchneriella subcapitata (green algae)  
Method: OECD Test Guideline 201

| M-Factor | ethanethiol | M-Factor (Chron. Aquat. Tox.) | 10 |

Elimination information (persistence and degradability)

Bioaccumulation : This material is not expected to bioaccumulate.

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

**Ecotoxicology Assessment**

Acute aquatic toxicity  
Ethyl Mercaptan : Very toxic to aquatic life.

Chronic aquatic toxicity  
Ethyl Mercaptan : Very toxic to aquatic life with long lasting effects.

Results of PBT assessment  
Ethyl Mercaptan : Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

**SECTION 13: Disposal considerations**

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.

**SECTION 14: 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)**
UN2363, ETHYL MERCAPTAN, 3, I, MARINE POLLUTANT, (ETHYL MERCAPTAN)

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**
UN2363, ETHYL MERCAPTAN, 3, I, (-48 °C), MARINE POLLUTANT, (ETHYL MERCAPTAN)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**
UN2363, ETHYL MERCAPTAN, 3, I

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**
UN2363, ETHYL MERCAPTAN, 3, I, (D/E), ENVIRONMENTALLY HAZARDOUS, (ETHYL MERCAPTAN)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**
UN2363, ETHYL MERCAPTAN, 3, I, ENVIRONMENTALLY HAZARDOUS, (ETHYL MERCAPTAN)

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**
UN2363, ETHYL MERCAPTAN, 3, I, ENVIRONMENTALLY HAZARDOUS, (ETHYL MERCAPTAN)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

**SECTION 15: Regulatory information**

**National legislation**

**Chemical Safety Assessment**

**Ingredients** : ethanethiol

A Chemical Safety Assessment has been carried out for this substance.

**Major Accident Hazard Legislation**

: 96/82/EC  
Update: 2003

Highly flammable  
7b

Quantity 1: 5,000 t  
Quantity 2: 50,000 t
Ethyl Mercaptan

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

Water contaminating class (Germany) : WGK 3 highly water endangering

Notification status
Europe REACH : On the inventory, or in compliance with the inventory
United States of America (USA) TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : 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 : On the inventory, or in compliance with the inventory
Philippines PICCS : 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: 4
Reactivity Hazard: 0

Further information
Legacy SDS Number : 10555

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>EC50%</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
</tr>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
</tr>
<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
</tr>
<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
</tr>
<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
</tbody>
</table>

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

- **H224**: Extremely flammable liquid and vapor.
- **H302**: Harmful if swallowed.
- **H317**: May cause an allergic skin reaction.
- **H332**: Harmful if inhaled.
- **H400**: Very toxic to aquatic life.
- **H410**: Very toxic to aquatic life with long lasting effects.
# Annex

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

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU3, SU8, SU9: Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC1, ERC4: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles</td>
</tr>
<tr>
<td>Further information</td>
<td>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</td>
</tr>
</tbody>
</table>

### 2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4:

Manufacture of substances, 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 |
| Dilution Factor (River) | 10 |
| Dilution Factor (Coastal Areas) | 100 |

| Other given operational conditions affecting environmental exposure |
|------------------------------------------------------------------|---|
| Number of emission days per year | 365 |
| Emission or Release Factor: Water | 0 % |
| Emission or Release Factor: Soil | 0 % |
| Remarks | Emission or Release Factor: Air | < 0.001 % |

### Technical conditions and measures / Organizational measures

- **Air:** Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: > 99.9 %)
- **Remarks:** Wastewater emission controls are not applicable as there is no direct release to wastewater.

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

- **Flow rate of sewage treatment plant effluent:** 2,000 m³/d
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Remarks : Not applicable as there is no release to wastewater.

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, PROC3, PROC8b, PROC15: Use in closed process, no likelihood of exposure, Use in closed batch process (synthesis or formulation), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Use as laboratory reagent

Amount used
Remarks : Not applicable

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC1, ERC4</td>
<td>EUSES</td>
<td>Fresh water</td>
<td>0.0018 µg/L</td>
<td>0.018</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.0001 µg/L</td>
<td>0.015</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>0.0013 µg/kg</td>
<td>0.0379</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>0.0039 µg/kg</td>
<td>0.0364</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.0003 µg/kg</td>
<td>0.0304</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>0.0010 µg/m3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERC1: Manufacture of substances
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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

RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.

1. Short title of Exposure Scenario: Distribution

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
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

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Environmental release category: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7: Manufacture of substances, Formulation of preparations, Formulation in materials, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids, Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers, Industrial use of substances in closed systems

Further information: Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC7, ERC6a: Manufacture of substances, Formulation of preparations, Formulation in materials, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use of substances in closed systems, Industrial use resulting in manufacture of another substance (use of intermediates)

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: Soil: 0.001 %
Remarks: Emission or Release Factor: Water: < 0.001 %

Technical conditions and measures / Organizational measures
Air: Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99.9 %)
Water: Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99.9 %)
Remarks: Negligible wastewater emissions as process operates without water contact.

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Conditions and measures related to municipal sewage treatment plant
Flow rate of sewage treatment: 2.000 m³/d
Remarks: Not applicable as there is no release to wastewater.

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, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), 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 non-dedicated facilities, 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), Use as laboratory reagent

Amount used
Remarks: Not applicable

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartments</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC1</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.0029 µg/L</td>
<td>0.0287</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>0.0007 µg/L</td>
<td>0.0734</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>0.0058 µg/kg</td>
<td>0.169</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>0.0062 µg/kg</td>
<td>0.0579</td>
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<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.0016 µg/kg</td>
<td>0.148</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Air</td>
<td>0.0027 µg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERC1: Manufacture of substances

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

RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.

1. Short title of Exposure Scenario: Use as an intermediate

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use: SU 3, SU8, SU9: Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of bulk, large

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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
- PROC15: Use as laboratory reagent

Environmental release category:
- ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Further information:
Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

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: 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: 0.01 %
- Emission or Release Factor: Soil: 0.1 %
- Remarks: Emission or Release Factor: Water: < 0.001 %

Technical conditions and measures / Organizational measures
- Air: Treat air emission to provide the required removal efficiency of (%): (Effectiveness: > 99.9 %)
- Water: Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99.9 %)
- Remarks: Negligible wastewater emissions as process operates without water contact.

Conditions and measures related to municipal sewage treatment plant
- Remarks: Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal
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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, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), 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 non-dedicated facilities, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities, Use as laboratory reagent

Amount used
Remarks: Not applicable

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6a</td>
<td>EUSES</td>
<td>Freshwater</td>
<td>0.0039 µg/L</td>
<td>0.0393</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.0013 µg/L</td>
<td>0.132</td>
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<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>0.0116 µg/kg</td>
<td>0.338</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>0.0085 µg/kg</td>
<td>0.0794</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.0028 µg/kg</td>
<td>0.266</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>0.0055 µg/m3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.

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

Sector of use: SU 3, SU 10: Industrial uses: Uses of substances as such or in preparations at industrial sites. Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

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:

- PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
- PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
- PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
- PROC 15: Use as laboratory reagent

### Environmental release category

- ERC 2: 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, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

### 2.1 Contributing scenario controlling environmental exposure for: ERC 2: Formulation of preparations

#### 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**: 365
- **Emission or Release Factor: Air**: 0,025 %
- **Emission or Release Factor: Soil**: 0 %
- **Remarks**: Emission or Release Factor: Water : < 0.001 %

#### Technical conditions and measures / Organizational measures

- **Air**: Treat air emission to provide the required removal efficiency of (%) : (Effectiveness: > 99,9 %)
- **Water**: Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%) : (Effectiveness: 99,9 %)
- **Remarks**: Soil emission controls are not applicable as there is no direct release to soil.

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

- **Remarks**: Not applicable as there is no release to wastewater.

#### 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
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applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, PROC26: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), 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), Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, 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), Use as laboratory reagent, Handling of solid inorganic substances at ambient temperature

Amount used Remarks : Not applicable

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC2</td>
<td>EUSES</td>
<td>Freshwater</td>
<td>0.0028 µg/L</td>
<td>0.0280</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.0007 µg/L</td>
<td>0.0698</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>0.0124 µg/kg</td>
<td>0.360</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>0.0060 µg/kg</td>
<td>0.0566</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.0015 µg/kg</td>
<td>0.141</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>0.0076 µg/m3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERC2: Formulation of preparations

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

RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.

1. Short title of Exposure Scenario: Injection as odorant in fuels – industrial

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

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

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

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PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15: Use as laboratory reagent
PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

Environmental release category: ERC7: Industrial use of substances in closed systems

Further information:
Covers injection as odourant in fuel and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems

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: 365
Emission or Release Factor: Air: 0,025 %
Emission or Release Factor: Soil: 0 %
Remarks: Emission or Release Factor: Water: < 0,001 %

Technical conditions and measures / Organizational measures:
Air:
Treat air emission to provide the required removal efficiency of (%) (Effectiveness: > 99,9 %)

Water:
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) (Effectiveness: 99,9 %)
Remarks: Soil emission controls are not applicable as there is no direct release to soil.

Conditions and measures related to municipal sewage treatment plant:
Remarks: Not applicable as there is no release to wastewater.

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, PROC3, PROC8a, PROC8b, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities,
Ethyl Mercaptan

Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Use as laboratory reagent

Amount used
Remarks: Not applicable

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC7</td>
<td>EUSES</td>
<td>Fresh water</td>
<td>0.0028 µg/L</td>
<td>0.0280</td>
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<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.0007 µg/L</td>
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<tr>
<td></td>
<td></td>
<td>Soil</td>
<td>0.0124 µg/kg</td>
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<tr>
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<td></td>
<td>Freshwater sediment</td>
<td>0.0060 µg/kg</td>
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<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
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<tr>
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<td></td>
<td>Air</td>
<td>0.0076 µg/m3</td>
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</tbody>
</table>

ERC7: Industrial use of substances in closed systems

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

RMMs and OCs are described in adequate documentation at site level and efficiency is checked on a regular basis.