SAFETY DATA SHEET

Ethyl Mercaptan
Version 1.8

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

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

Local: See Company Address

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
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
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

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

SECTION 2: Hazards identification

Classification of the substance or mixture
GHS Classification and labelling according to JIS Z 7252-2019 and JIS Z 7253-2019 (GHS 2015)

Classification
- Flammable liquids, Category 1
- Acute toxicity, Category 4, Oral
- Acute toxicity, Category 4, Inhalation
- Serious eye damage/eye irritation, Category 2
- Skin sensitization, Sub-category 1B

SDS Number:100000068740
SAFETY DATA SHEET

Ethyl Mercaptan

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Revision Date 2020-06-16

Specific target organ toxicity - single exposure, Category 1, Central nervous system
Specific target organ toxicity - single exposure, Category 3, Respiratory tract irritation
Short-term (acute) aquatic hazard, Category 1
Long-term (chronic) aquatic hazard, Category 1

Labeling

Symbol(s): 

Signal Word: Danger

Hazard Statements: 

H224: Extremely flammable liquid and vapor.
H302 + H332: Harmful if swallowed or if inhaled.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H370: Causes damage to organs (Central nervous system).
H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P240: Ground and bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242: Use non-sparking tools.
P243: Take action to prevent static discharges.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/ eye protection/ face protection.

Response:
P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P312: Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P311: IF exposed or concerned: Call a POISON CENTER/ doctor.
P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313: If eye irritation persists: Get medical advice/ attention.
P362 + P364: Take off contaminated clothing and wash it before reuse.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391: Collect spillage.
**SAFETY DATA SHEET**

**Ethyl Mercaptan**

**Storage:**
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
P403 + P235: Store in a well-ventilated place. Keep cool.
P405: Store locked up.

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

**SECTION 3: Composition/information on ingredients**

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>ETSH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethanethiol</td>
</tr>
<tr>
<td></td>
<td>Ethyl Mercaptan</td>
</tr>
</tbody>
</table>

| Molecular formula       | C2H6S                       |

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration</th>
<th>ENCS/ISHL number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Mercaptan</td>
<td>75-08-1</td>
<td>99%</td>
<td>2-460</td>
</tr>
</tbody>
</table>

**SECTION 4: First aid measures**

**General advice**: Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

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

**In case of skin contact**: If on skin, rinse well with water. If on clothes, remove clothes.

**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**: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

**Flash point**: -48°C (-54°F)

**Autoignition temperature**: 295°C (563°F)

**Suitable extinguishing media**: Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.

**Unsuitable extinguishing media**: High volume water jet.
Specific hazards during fire fighting: Do not allow run-off from fire fighting to enter drains or water courses.

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

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

Fire and explosion protection: Do not spray on 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.

Hazardous decomposition products: Carbon oxides. Sulfur oxides.

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 exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. 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. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
**SAFETY DATA SHEET**

**Ethyl Mercaptan**

Version 1.8  
Revision Date 2020-06-16

<table>
<thead>
<tr>
<th>Advice on protection against fire and explosion</th>
<th>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.</th>
</tr>
</thead>
</table>

**Storage**

<table>
<thead>
<tr>
<th>Requirements for storage areas and containers</th>
<th>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.</th>
</tr>
</thead>
</table>

**SECTION 8: Exposure controls/personal protection**

**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 if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Full-Face Air-Purifying Respirator for Organic Vapors, Dusts and Mists. 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

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SDS Number:100000068740  
5/15
**Ethyl Mercaptan**

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**Version 1.8**  
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**Hygiene measures**: After contact. Footwear protecting against chemicals.

When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

### SECTION 9: Physical and chemical properties

**Information on basic physical and chemical properties**

**Appearance**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Repulsive</td>
</tr>
</tbody>
</table>

**Safety data**

<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>Lower explosion limit</td>
<td>2.8 %(V)</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>18 %(V)</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>295°C (563°F)</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C2H6S</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>62.14 g/mol</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Pour point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>35°C (95°F)</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>16.20 PSI</td>
</tr>
<tr>
<td></td>
<td>at 37.8°C (100.0°F)</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>at 15.6 °C (60.1 °F)</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Negligible</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>(Air = 1.0)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>1</td>
</tr>
<tr>
<td>Percent volatile</td>
<td>&gt; 99 %</td>
</tr>
</tbody>
</table>
### SECTION 10: Stability and reactivity

**Reactivity**
Stable under recommended storage conditions.

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

**Possibility of hazardous reactions**

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

**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  
LC50: 11.23 mg/l  
Exposure time: 4 h  
Species: Rat  
Sex: male  
Test atmosphere: vapor

**Skin irritation**
Ethyl Mercaptan  
slight irritation.

**Eye irritation**
Ethyl Mercaptan  
slight irritation. Information given is based on data obtained from similar substances.
Ethyl Mercaptan

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: 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.

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.

Species: Rat, Male and female
Sex: Male and female
Application Route: Inhalation
Dose: 9, 97, 196 ppm
Exposure time: 13 wks
Number of exposures: 6 hr/d, 5 d/wk
NOEL: >=196 ppm
Method: OECD Guideline 413
Information given is based on data obtained from similar substances.

Species: Rat, Male and female
Sex: Male and female
Application Route: Inhalation
Dose: 0.03, 0.26, 0.55 mg/L
Exposure time: 13 wks
Number of exposures: 6 hr/d, 5 d/wk
NOEL: 0.03 mg/l
Method: OECD Test Guideline 413
Information given is based on data obtained from similar substances.

Genotoxicity in vitro

Ethyl Mercaptan: Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Escherichia coli - reverse mutation assay)
Result: negative
## Genotoxicity in vivo

**Ethyl Mercaptan**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse lymphoma assay</td>
<td>OECD Guideline 476</td>
<td>Ambiguous</td>
</tr>
<tr>
<td>Sister Chromatid Exchange Assay</td>
<td>with and without metabolic activation</td>
<td>positive</td>
</tr>
</tbody>
</table>

### Reproductive toxicity

**Ethyl Mercaptan**

<table>
<thead>
<tr>
<th>Species</th>
<th>Dose</th>
<th>Application Route</th>
<th>Number of exposures</th>
<th>Exposure time</th>
<th>Method</th>
<th>NOAEL Parent</th>
<th>NOAEL F1</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat</td>
<td>0, 10, 50, 200 mg/kg</td>
<td>Oral diet</td>
<td>once daily</td>
<td>42-53 days</td>
<td>OECD Guideline 422</td>
<td>200 mg/kg</td>
<td>50 mg/kg</td>
<td>negative</td>
</tr>
</tbody>
</table>

Information given is based on data obtained from similar substances.

### Developmental Toxicity

**Ethyl Mercaptan**

<table>
<thead>
<tr>
<th>Species</th>
<th>Dose</th>
<th>Application Route</th>
<th>Number of exposures</th>
<th>Test period</th>
<th>Method</th>
<th>NOAEL Teratogenicity</th>
<th>NOAEL Maternal</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat</td>
<td>0, 0.037, 0.28, or 0.56 mg/L</td>
<td>Inhalation</td>
<td>6 hrs/d</td>
<td>GD 6-19</td>
<td>OECD Guideline 414</td>
<td>&gt; 0.56 mg/L</td>
<td>&gt; 200 ppm</td>
<td>&gt; 200 ppm</td>
</tr>
</tbody>
</table>

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

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.

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

M-Factor
ethanethiol : M-Factor (Acute Aquat. Tox.) 10
M-Factor (Chron. Aquat. Tox.) 10

Biodegradability
Ethyl Mercaptan : aerobic
Result: Not readily biodegradable.
0 %
Testing period: 29 d
Method: OECD Test Guideline 301F

Elimination information (persistence and degradability)

Bioaccumulation : This material is not expected to bioaccumulate.

Mobility
Ethyl Mercaptan

The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

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

Short-term (acute) aquatic hazard
Ethyl Mercaptan : Very toxic to aquatic life.

Long-term (chronic) aquatic hazard
Ethyl Mercaptan : 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
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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
Poisonous and Deleterious Substances Control Law
: Not applicable

Industrial Safety and Health Law
Substances Subject to be Notified Names Article 57-2 (Enforcement Order Table 9)
: ethanethiol (62)
Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)
: Inflammable Substance
Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)
: Inflammable Substance
Harmful Substances Required Permission for Manufacture
Subject to Labeling Requirements Article 57 (Enforcement Order Article 18)
: Not applicable
Ordinance on Prevention of Organic Solvent Poisoning
Ordinance on Prevention of Lead Poisoning
: Not applicable
Ethyl Mercaptan

Harmful Substances Prohibited from Manufacture: Not applicable

Ordinance on Prevention of Hazards Due to Specified Chemical Substances: Not applicable

Ordinance on Prevention of Tetraalkyl Lead Poisoning: Not applicable

Substances Prevented From Impairment of Health: Not applicable

Chemical Substance Control Law: Not applicable for Specified Chemical Substance, Monitoring Chemical Substance and Priority Assessment Chemical Substance.

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

Class I Designated Chemical Substances: ethanethiol (45)

Other regulations

Fire Service Law: Flammable liquids
Special flammables
Hazardous rank I

High Pressure Gas Safety Act: Not applicable

Explosive Control Law: Not applicable

Vessel Safety Law: Flammable liquids (Article 2 and 3 of rules on shipping and storage of dangerous goods and its Attached Table 1)

Aviation Law: Flammable liquid (Article 194 of The Enforcement Rules of Aviation Law and its Attached Table 1)

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 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 KECl: 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
China IECSC : On the inventory, or in compliance with the inventory
Taiwan TCSI : On the inventory, or in compliance with the inventory

SECTION 16: Other information

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>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<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>
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<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>
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<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
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<td>STEL</td>
<td>Short-term Exposure Limit</td>
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<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act.</td>
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<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
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<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
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<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
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<td>&lt;=</td>
<td>Less Than or Equal To</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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