SAFETY DATA SHEET

Scentinel® A Gas Odorant

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

Product information

Product Name: Scentinel® A Gas Odorant
Material: 1119674, 1119564, 1106807, 1098462, 1102596, 1086453, 1098407, 1086452, 1102264, 1072060, 1098463, 1103512, 1070006, 1024777, 1024776, 1024775, 1024774, 1029441, 1029442, 1029443, 1029444, 1029445

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 +32.14.583516 (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

ODOR-FADE WARNING

A GAS LEAK CAN CAUSE A FIRE OR EXPLOSION RESULTING IN SERIOUS INJURY OR DEATH.

Be aware that the stenching chemical added to gas to make it detectable may not warn of a gas leak or the presence of propane or natural gas to all persons in every instance.

Instances where the odorant in an odorized gas may be undetectable include:

- Odor intensity may fade or be eliminated for a variety of chemical and physical causes, including the oxidation of rusting pipes, adsorption into or sticking onto the interior of pipes or appliances, or...
absorption into liquids.
- Contact with soil in underground leaks may de-odorize or remove odorant from the gas.
- Some people have a diminished ability, or inability to smell the stench. Factors that negatively affect a person's sense of smell include age, gender, medical conditions, and alcohol/tobacco usage.
- The stench of odorized gas may not awaken sleeping persons.
- Other odors may mask or hide the stench.
- Exposure to the odor for even a short period of time, may cause nasal fatigue, where a person can no longer smell the stench.

Gas detectors listed by the Underwriters Laboratories (UL) can be used as an extra measure of safety for detecting gas leaks, especially under conditions where the odorant alone may not provide an adequate warning. Gas detectors emit a loud, shrill sound when gas is present and do not depend on sense of smell. Because the odor intensity can fade or people may have problems with their sense of smell, we recommend installing, per manufacturer's instructions, one or more combustible gas detectors, in suitable locations to ensure adequate coverage to detect gas leaks.

Educate yourself, your employees, and your customers with the content of this warning and other important facts associated with the so-called "odor-fade phenomenon."

SECTION 2: Hazards identification

Classification of the substance or mixture
GHS Classification and labelling according to JIS Z7252-2014 and JIS Z7253-2012 (GHS 2011)

Classification:
- Flammable liquids, Category 1
- Acute toxicity, Category 4, Oral
- Acute toxicity, Category 4, Inhalation
- Serious eye damage/eye irritation, Category 2
- 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.
- 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/ sparks/ open flames/ hot surfaces. No smoking.
  - P233: Keep container tightly closed.
  - P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
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/ shower.
P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor 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.
P337 + P313: If eye irritation persists: Get medical advice/ attention.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391: Collect spillage.

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

| Synonyms               | ETSH  
|                       | Ethaneethiol 
|                       | Ethyl Mercaptan |
| Molecular formula      | C2H6S |
| Chemical name          | Concentration | ENCS/ISHL number |
| Ethyl Mercaptan        | 75-08-1 | 99% | 2-460 |

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. 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.

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 firefighting: 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
### SECTION 5: First aid measures

**First aid measures:**

1. **Inhalation:** Remove victim to fresh air. If breathing is difficult, give artificial respiration. If breathing stops, start CPR immediately. Keep warm. Do not give anything by mouth.

2. **Skin contact:** Wash thoroughly with soap and water. If irritation persists, seek medical attention.

3. **Eyes contact:** Wash affected eye immediately with plenty of water for 15 minutes. Seek medical attention if irritation persists.

4. **Ingestion:** If swallowed, do not induce vomiting. Call a doctor immediately. Wash out mouth and give plenty of water. Do not induce vomiting unless told to do so by a doctor.

### SECTION 6: Fire-fighting measures

**Fire-fighting measures:**

1. **Extinguishing media:** Use water. Do not use foam, CO₂, powder or alcohol-based fire extinguishers.

2. **Special hazards arising from the substance or mixture:** Non-flammable. However, decomposes when burning, releasing toxic fumes.

3. **Precautions for fire-fighters:** Wear protective clothing and self-contained breathing apparatus.

### 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

**Engineering measures**

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

**Personal protective equipment**

- Respiratory protection: Use a powered air-purifying respirator with P100 filters if in the work place or in the atmosphere.
- Eye protection: Use safety glasses or goggles.
- Skin protection: Use impermeable clothing and gloves.
- Foot protection: Wear closed-toe shoes.
- Use of sound level reduction equipment: None required.

**General protective measures:**

- Keep container tightly closed.
- Use of personal hygiene facilities: Wash hands before leaving work place.
- Sanitization procedures: None required.

**Hygiene measures:**

- Wash hands before eating, drinking, smoking, or going to the toilet.
- Take breaks regularly.
- Keep the work area clean.
- Remove contaminated clothing and wash exposed skin.
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. 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. Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific workplace. 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
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

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 polymerization does not occur.

Further information: No decomposition if stored and applied as directed.

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: Oxidizing solids. Oxidizing liquids.

Carbon oxides

Sulfur oxides

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

SECTION 11: Toxicological information

Scentinel® A Gas Odorant

Acute oral toxicity: Acute toxicity estimate: 688.89 mg/kg
Method: Calculation method

Scentinel® A Gas Odorant

Acute inhalation toxicity: Acute toxicity estimate: 11.11 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Skin irritation
Ethyl Mercaptan: slight irritation.

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

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: 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

Test Type: Mouse lymphoma assay  
Method: OECD Guideline 476  
Result: Ambiguous

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

Genotoxicity in vivo

Ethyl Mercaptan: Test Type: Micronucleus test  
Species: Mouse  
Method: Mutagenicity (micronucleus test)  
Result: negative

Reproductive toxicity

Ethyl Mercaptan: Species: Rat

SDS Number: 100000068741
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.

**Scentinel® A Gas Odorant**  
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: *Onchorhynchus 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**

This material is not expected to be readily biodegradable.

**Elimination information (persistence and degradability)**

**Bioaccumulation**

This material is not expected to bioaccumulate.

**Mobility**

Ethyl Mercaptan : No data available

**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.

**Ecotoxicology Assessment**

**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

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 relevant

Industrial Safety and Health Law
Substances Subject to be Notified Names
: ethanethiol (62)

Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)
: Inflammable Substance

Hazardous Substances Subject to Labeling Requirements
: Not relevant

Ordinance on Prevention of Organic Solvent Poisoning
: Not relevant

Chemical Substance Control Law
: Not relevant

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof
: Not relevant

Other regulations
Fire Service Law
: Flammable liquids
Special flammables
Hazardous rank I

Explosive Control Law
: Not relevant

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

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

Scentinel® A Gas Odorant

Version 2.3
Revision Date 2020-03-09

Notification status

Europe REACH : On the inventory, or in compliance with the inventory
Switzerland CH INV : On the inventory, or in compliance with the inventory
United States of America (USA) : 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 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
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 : 25580

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>ACGIH</th>
<th>American Conference of Government Industrial Hygienists</th>
<th>LD50</th>
<th>Lethal Dose 50%</th>
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<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
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<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
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<td>CNS</td>
<td>Central Nervous System</td>
<td>NTP</td>
<td>National Toxicology Program</td>
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<td>CAS</td>
<td>Chemical Abstract Service</td>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<tr>
<td>EC50</td>
<td>Effective Concentration</td>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>EC50</td>
<td>Effective Concentration 50%</td>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
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<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<td>EINECS</td>
<td>European Inventory of Existing</td>
<td>PICCS</td>
<td>Philippines Inventory of</td>
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SDS Number:100000068741  14/15
<table>
<thead>
<tr>
<th>Chemical Substances</th>
<th>Commercial Chemical Substances</th>
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</thead>
<tbody>
<tr>
<td>MAK: Germany Maximum Concentration Values</td>
<td>PRNT: Presumed Not Toxic</td>
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<tr>
<td>GHS: Globally Harmonized System</td>
<td>RCRA: Resource Conservation Recovery Act</td>
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<tr>
<td>&gt;=: Greater Than or Equal To</td>
<td>STEL: Short-term Exposure Limit</td>
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<td>IC50: Inhibition Concentration 50%</td>
<td>SARA: Superfund Amendments and Reauthorization Act</td>
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<td>IARC: International Agency for Research on Cancer</td>
<td>TLV: Threshold Limit Value</td>
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<tr>
<td>IECSC: Inventory of Existing Chemical Substances in China</td>
<td>TWA: Time Weighted Average</td>
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<tr>
<td>ENCS: Japan, Inventory of Existing and New Chemical Substances</td>
<td>TSCA: Toxic Substance Control Act</td>
</tr>
<tr>
<td>KECI: Korea, Existing Chemical Inventory</td>
<td>UVCB: Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
</tr>
<tr>
<td>&lt;=: Less Than or Equal To</td>
<td>WHMIS: Workplace Hazardous Materials Information System</td>
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<td>LC50: Lethal Concentration 50%</td>
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