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

Product information
Product Name: Scentinel® E Gas Odorant
Material: 1106808, 1086435, 1086434, 1095112, 1064505, 1098464, 1098226, 1024677, 1024673, 1034741, 1024674, 1024676, 1024678, 1024780, 1024782, 1024781, 1024778, 1024783, 1036153, 1024779, 1024675, 1105014

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

Emergency telephone:
Health: 866.442.9628 (North America)
         1.832.813.4984 (International)
Transport:
         North America: CHEMTREC 800.424.9300 or 703.527.3887
         Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
         EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
         South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

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
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

<table>
<thead>
<tr>
<th>Danger</th>
<th>Physical state: Liquid</th>
<th>Color: Clear</th>
<th>Odor: Repulsive</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA Hazards</td>
<td>Flammable Liquid, Sensitizer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Classification
- Flammable liquids, Category 2
- Skin sensitization, Category 1

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Labeling

Symbol(s): ☢️ ☢️

Signal Word: Danger

Hazard Statements:
- H225: Highly flammable liquid and vapor.
- H317: May cause an allergic skin reaction.

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.
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P264 Wash skin thoroughly after handling.
  - P272 Contaminated work clothing should not be allowed out of the workplace.
  - P280 Wear protective gloves/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.
  - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
  - P337 + P313 If eye irritation persists: Get medical advice/attention.
  - P363 Wash contaminated clothing before reuse.
  - P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

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

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

Carcinogenicity:

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
SECTION 3: Composition/information on ingredients

Synonyms: Mercaptan Mixture
Gas Odorant

Molecular formula: Mixture

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butyl Mercaptan</td>
<td>75-66-1</td>
<td>75 - 80</td>
</tr>
<tr>
<td>Isopropyl Mercaptan</td>
<td>75-33-2</td>
<td>13 - 18</td>
</tr>
<tr>
<td>n-Propyl Mercaptan</td>
<td>107-03-9</td>
<td>3 - 8</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. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

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

In case of skin contact: If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point: -18 °C (0 °F) estimated

Autoignition temperature: 200 °C (392 °F)

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

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: Wear self-contained breathing apparatus for firefighting if
equipment for fire-fighters 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. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). 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.

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

Requirements for storage areas and containers: 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

Chevron Phillips Chemical Company LP

Ingredients | Basis  | Value | Control parameters | Note |
---|---|---|---|---|
\(\text{t-Butyl Mercaptan}\) | Manufacturer | TWA | 0.5 ppm | |

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. 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: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

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

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### SECTION 9: Physical and chemical properties

**Information on basic physical and chemical properties**

**Appearance**
- **Physical state**: Liquid
- **Color**: Clear
- **Odor**: Repulsive

**Safety data**
- **Flash point**: -18 °C (0 °F) estimated
- **Lower explosion limit**: 1.4 %(V)
- **Upper explosion limit**: 12.5 %(V)
- **Oxidizing properties**: no
- **Autoignition temperature**: 200 °C (392 °F)
- **Thermal decomposition**: No data available
- **Molecular formula**: Mixture
- **Molecular weight**: Not applicable
- **pH**: Not applicable
- **pour point**: No data available
- **Boiling point/boiling range**: 57 - 60 °C (135 - 140 °F)
- **Vapor pressure**: 7.00 PSI at 38 °C (100 °F)
- **Relative density**: 0.81, 16 °C(61 °F)
- **Water solubility**: Negligible
- **Partition coefficient: n-octanol/water**: No data available
- **Viscosity, kinematic**: No data available
- **Relative vapor density**: 2 (Air = 1.0)
- **Evaporation rate**: > 1 (N-Butyl Acetate = 1)
- **Percent volatile**: > 99 %
**SECTION 10: Stability and reactivity**

<table>
<thead>
<tr>
<th>Chemical stability</th>
<th>This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.</th>
</tr>
</thead>
</table>

**Possibility of hazardous reactions**

<table>
<thead>
<tr>
<th>Conditions to avoid</th>
<th>Not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials to avoid</td>
<td>May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.</td>
</tr>
<tr>
<td>Thermal decomposition products</td>
<td>No data available</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides, Sulfur oxides</td>
</tr>
<tr>
<td>Other data</td>
<td>No decomposition if stored and applied as directed.</td>
</tr>
</tbody>
</table>

**SECTION 11: Toxicological information**

**Scentinel® E Gas Odorant**

**Acute oral toxicity**

<table>
<thead>
<tr>
<th>Method</th>
<th>Calculation method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acute toxicity estimate: 10,366 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Acute toxicity estimate: &gt; 5,000 mg/kg</td>
</tr>
</tbody>
</table>

**t-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Test atmosphere: vapor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: OECD Test Guideline 403</td>
</tr>
<tr>
<td>LC50: 26643 ppm</td>
</tr>
<tr>
<td>Exposure time: 4 h</td>
</tr>
<tr>
<td>Species: rat</td>
</tr>
<tr>
<td>Sex: male and female</td>
</tr>
</tbody>
</table>

**Acute inhalation toxicity**

<table>
<thead>
<tr>
<th>Test atmosphere: vapor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: OECD Test Guideline 403</td>
</tr>
<tr>
<td>LC50: 22200 ppm</td>
</tr>
<tr>
<td>Exposure time: 4 h</td>
</tr>
<tr>
<td>Species: rat</td>
</tr>
<tr>
<td>Sex: male</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test atmosphere: vapor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: OECD Test Guideline 403</td>
</tr>
<tr>
<td>LC50: 16500 ppm</td>
</tr>
<tr>
<td>Exposure time: 4 h</td>
</tr>
<tr>
<td>Species: mouse</td>
</tr>
<tr>
<td>Sex: male</td>
</tr>
</tbody>
</table>
Scentinel® E Gas Odorant

Skin irritation: May cause skin irritation and/or dermatitis.

Eye irritation: May cause irreversible eye damage.

Sensitization: Causes sensitization.

Repeated dose toxicity

<table>
<thead>
<tr>
<th>Compound</th>
<th>Species: rat, Male and female</th>
<th>Sex: Male and female</th>
<th>Application Route: Inhalation</th>
<th>Dose:</th>
<th>Exposure time:</th>
<th>Number of exposures:</th>
<th>NOEL:</th>
<th>Lowest observable effect level:</th>
<th>Method:</th>
<th>Target Organs:</th>
<th>Information given is based on data obtained from similar substances.</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td></td>
<td></td>
<td></td>
<td>9, 97, 196 ppm</td>
<td>13 wks</td>
<td>6 hrs/d, 5 d/wk</td>
<td>&gt; 196 ppm</td>
<td></td>
<td></td>
<td>OECD Guideline 422</td>
<td>Liver, Kidney, Blood, Upper respiratory tract</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10, 50, 200 mg/kg bw/day</td>
<td>42-53 days</td>
<td>Daily</td>
<td>50 mg/kg bw/day</td>
<td></td>
<td>200 mg/kg bw/day</td>
<td>OECD Guideline 422</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200 mg/kg bw/day</td>
<td>OECD Guideline 422</td>
<td></td>
</tr>
</tbody>
</table>

Reproductive toxicity

<table>
<thead>
<tr>
<th>Compound</th>
<th>Species: rat</th>
<th>Sex: male and female</th>
<th>Application Route: oral gavage</th>
<th>Dose:</th>
<th>Number of exposures:</th>
<th>Test period:</th>
<th>NOAEL Parent:</th>
<th>NOAEL F1:</th>
<th>No adverse effects expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td></td>
<td></td>
<td></td>
<td>10, 50, 200 mg/kg bw/day</td>
<td>Daily</td>
<td>42-53 days</td>
<td>200 mg/kg bw/day</td>
<td>50 mg/kg bw/day</td>
<td>No adverse effects expected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Developmental Toxicity

<table>
<thead>
<tr>
<th>Compound</th>
<th>Species: mouse</th>
<th>Application Route: Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Dose: 11, 99, 195 ppm
Exposure time: GD 6-16
Number of exposures: 6 hrs/d
NOAEL Teratogenicity: >= 195 ppm
NOAEL Maternal: >= 195 ppm

Species: rat
Application Route: Inhalation
Dose: 11, 99, 195 ppm
Exposure time: GD6-19
Number of exposures: 6 hrs/d
NOAEL Teratogenicity: >=195 ppm
NOAEL Maternal: >= 195 ppm

Species: rat
Application Route: oral gavage
Dose: 10, 50, 200 mg/kg bw/day
Exposure time: 42-53 days
Number of exposures: Daily
NOAEL Teratogenicity: 50 mg/kg bw/day
NOAEL Maternal: 200 mg/kg bw /day

Scentinel® E Gas Odorant
Aspiration toxicity
May be harmful if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

\textbf{t-Butyl Mercaptan}
Carcinogenicity: Not available
Mutagenicity: Did not show mutagenic effects in animal experiments.
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: No toxicity to reproduction

Scentinel® E Gas Odorant
Further information
Concentrations substantially above the TLV value may cause narcotic effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Solvents may degrease the skin.

SECTION 12: Ecological information

\textbf{Toxicity to fish}

\textbf{t-Butyl Mercaptan}
LC50: 34 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203

\textbf{Isopropyl Mercaptan}
LC50: 34 mg/l
Exposure time: 96 h
semi-static test Analytical monitoring: yes
Method: OECD Test Guideline 203
Information given is based on data obtained from similar
substances.

n-Propyl Mercaptan

<table>
<thead>
<tr>
<th>Substance</th>
<th>LC50</th>
<th>Exposure time</th>
<th>Species</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Propyl Mercaptan</td>
<td>1.3 mg/l</td>
<td>96 h</td>
<td>Pimephales promelas (fathead minnow)</td>
<td>OECD Test Guideline 203</td>
</tr>
<tr>
<td>Test substance</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Toxicity to daphnia and other aquatic invertebrates

**t-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
<th>Exposure time</th>
<th>Species</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td>6.7 mg/l</td>
<td>48 h</td>
<td>Daphnia magna (water flea)</td>
<td>OECD Test Guideline 202</td>
</tr>
<tr>
<td>Test substance</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 202</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Isopropyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
<th>Exposure time</th>
<th>Species</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Mercaptan</td>
<td>0.25 - 0.5 mg/l</td>
<td>48 h</td>
<td>Daphnia magna (water flea)</td>
<td>OECD Test Guideline 202</td>
</tr>
<tr>
<td>Test substance</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 202</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**n-Propyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
<th>Exposure time</th>
<th>Species</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Propyl Mercaptan</td>
<td>0.07 mg/l</td>
<td>48 h</td>
<td>Daphnia magna (water flea)</td>
<td>OECD Test Guideline 202</td>
</tr>
<tr>
<td>Test substance</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 202</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Toxicity to algae

**t-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
<th>Exposure time</th>
<th>Species</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td>24 mg/l</td>
<td>72 h</td>
<td>Pseudokirchneriella subcapitata (green algae)</td>
<td>OECD Test Guideline 201</td>
</tr>
</tbody>
</table>

**propane-2-thiol**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>propane-2-thiol</td>
<td>1</td>
</tr>
</tbody>
</table>

**propane-1-thiol**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>propane-1-thiol</td>
<td>10</td>
</tr>
</tbody>
</table>

Elimination information (persistence and degradability)

Bioaccumulation

**t-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td>12</td>
</tr>
</tbody>
</table>

Bioaccumulation is unlikely.

Biodegradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradability</td>
<td>Expected to be biodegradable</td>
</tr>
</tbody>
</table>

Ecotoxicology Assessment

Acute aquatic toxicity

**t-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Acute aquatic toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butyl Mercaptan</td>
<td>Toxic to aquatic life</td>
</tr>
</tbody>
</table>

**Isopropyl Mercaptan**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Acute aquatic toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Mercaptan</td>
<td>Very toxic to aquatic life</td>
</tr>
</tbody>
</table>

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n-Propyl Mercaptan: Very toxic to aquatic life.

Chronic aquatic toxicity

t-Butyl Mercaptan: Toxic to aquatic life with long lasting effects.

Isopropyl Mercaptan: Very toxic to aquatic life with long lasting effects.

n-Propyl Mercaptan: Very toxic to aquatic life with long lasting effects.

Results of PBT assessment

t-Butyl 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., 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)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN,
SAFETY DATA SHEET

Scentinel® E Gas Odorant

Version 1.6

Revision Date 2015-01-12

ISOPROPYL MERCAPTAN), 3, II, (-18 °C), MARINE POLLUTANT, (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, ENVIRONMENTALLY HAZARDOUS

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, ENVIRONMENTALLY HAZARDOUS

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

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

CERCLA Reportable Quantity : This material does not contain any components with a CERCLA RQ.

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

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SARA 313 Ingredients : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Massachusetts Right To Know : n-Propyl Mercaptan - 107-03-9
t-Butyl Mercaptan - 75-66-1
Isopropyl Mercaptan - 75-33-2

Pennsylvania Right To Know : t-Butyl Mercaptan - 75-66-1

New Jersey Right To Know : n-Propyl Mercaptan - 107-03-9
t-Butyl Mercaptan - 75-66-1
Isopropyl Mercaptan - 75-33-2

California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

MSDS Number:100000013401
SAFETY DATA SHEET

Scentinel® E Gas Odorant

Version 1.6
Revision Date 2015-01-12

Europe REACH : On the inventory, or in compliance with the inventory
United States of America 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: 3
Reactivity Hazard: 0

Further information
Legacy SDS Number : 93850

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

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

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

| Key or legend to abbreviations and acronyms used in the safety data sheet |
|-----------------------------|---------------------|---------------------|
| ACGIH | American Conference of Government Industrial Hygienists | LD50 | Lethal Dose 50% |
| AICS | Australia, Inventory of Chemical Substances | LOAEL | Lowest Observed Adverse Effect Level |
| DSL | Canada, Domestic Substances List | NFPA | National Fire Protection Agency |
| NDSL | Canada, Non-Domestic Substances List | NIOSH | National Institute for Occupational Safety & Health |
| CNS | Central Nervous System | NTP | National Toxicology Program |
| CAS | Chemical Abstract Service | NZIoC | New Zealand Inventory of Chemicals |
| EC50 | Effective Concentration | NOAEL | No Observable Adverse Effect Level |
| EC50 | Effective Concentration 50% | NOEC | No Observed Effect Concentration |
| EGEST | EOSCA Generic Exposure Scenario Tool | OSHA | Occupational Safety & Health Administration |
| EOSCA | European Oilfield Specialty Chemicals Association | PEL | Permissible Exposure Limit |
| EINECS | European Inventory of Existing Chemicals | PICCS | Philippines Inventory of |

MSDS Number: 100000013401

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<table>
<thead>
<tr>
<th>Chemical Substances</th>
<th>Commercial Chemical Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAK Germany Maximum Concentration Values</td>
<td>PRNT Presumed Not Toxic</td>
</tr>
<tr>
<td>GHS Globally Harmonized System</td>
<td>RCRA Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>&gt;= Greater Than or Equal To</td>
<td>STEL Short-term Exposure Limit</td>
</tr>
<tr>
<td>IC50 Inhibition Concentration 50%</td>
<td>SARA Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>IARC International Agency for Research on Cancer</td>
<td>TLV Threshold Limit Value</td>
</tr>
<tr>
<td>IECSC Inventory of Existing Chemical Substances in China</td>
<td>TWA Time Weighted Average</td>
</tr>
<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>
</tr>
<tr>
<td>LC50 Lethal Concentration 50%</td>
<td></td>
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</tbody>
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