


**SCENTINEL® N Gas Odorant**

Version 2.1

Revision Date 2022-06-07

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2015/830

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**
**1.1**
**Product information**

Product Name : SCENTINEL® N Gas Odorant  
 Material : 1120698, 1120697, 1120696, 1119303, 1116175, 1099837,  
 1027464, 1024680, 1024681, 1024683, 1027463, 1024682

**EC-No.Registration number**

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
t-Butyl Mercaptan	75-66-1 200-890-2	Chevron Phillips Chemicals International NV 01-2119491288-26-0000
Isopropyl Mercaptan	75-33-2 200-861-4	Chevron Phillips Chemicals International NV 01-2119510881-44-0001
n-Propyl Mercaptan	107-03-9 203-455-5	Chevron Phillips Chemicals International NV 01-2120770275-52-0000

**1.3**
**Details of the supplier of the safety data sheet**

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

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

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

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**1.4****Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

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

Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)

Belgium: 070 245 245 (24 hours/day, 7 days/week)

Bulgaria: +359 2 9154 233

Croatia: +3851 2348 342 (24 hours/day, 7 days/week)

Cyprus: 1401

Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402

Denmark: Danish Poison Center (Gifflinjen): +45 8212 1212

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

Finland: 0800 147 111 09 471 977 (24 hours/day)

France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)

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

Greece: (0030) 2107793777 (24 hours/day, 7 days/week)

Hungary: +36-80-201-199 (24 hours/day, 7 days/week)

Iceland: 543 2222 (24 hours/day, 7 days/week)

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

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

Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic

Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371

67042473. (24 hours.)

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

Lithuania: +370 (85) 2362052

Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)

Malta: +356 2395 2000

The Netherlands: NVIC: +31 (0)88 755 8000

Norway: 22 59 13 00 (24 hours/day, 7 days/week)

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

Portugal: CIAV phone number: +351 800 250 250

Romania: +40213183606

Slovakia: +421 2 5477 4166

Slovenia: Phone number: 112

Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)

Sweden: 112 – ask for Poisons Information

Responsible Department : Product Safety and Toxicology Group

E-mail address : SDS@CPChem.com

Website : www.CPChem.com

**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.

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

Flammable liquids, Category 2	H225: Highly flammable liquid and vapor.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

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

Hazard pictograms	:	  
Signal Word	:	Danger
Hazard Statements	:	H225 Highly flammable liquid and vapor. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H410 Very toxic to aquatic life with long lasting effects.
Precautionary Statements	:	<b>Prevention:</b> P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

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P233 smoking.  
Keep container tightly closed.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/  
eye protection/ face protection/ hearing  
protection.

**Response:**

P370 + P378 In case of fire: Use dry sand, dry chemical  
or alcohol-resistant foam to extinguish.

P391 Collect spillage.

Hazardous ingredients which must be listed on the label:

- 75-66-1 t-Butyl Mercaptan
- 75-33-2 Isopropyl Mercaptan
- 107-03-9 n-Propyl Mercaptan
- 513-53-1 sec-butyl Mercaptan

**SECTION 3: Composition/information on ingredients****3.1 - 3.2****Substance or Mixture**

Synonyms : Scentinel® N-4 Gas Odorant  
Mercaptan Mixture  
Gas Odorant

Molecular formula : Mixture

**Hazardous ingredients**

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
<b>t-Butyl Mercaptan</b>	<b>75-66-1</b> <b>200-890-2</b>	Flam. Liq. 2; H225 Eye Irrit. 2; H319 Skin Sens. 1B; H317 Aquatic Chronic 2; H411	75 - 80
Isopropyl Mercaptan	75-33-2 200-861-4	Flam. Liq. 2; H225 Skin Sens. 1B; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	13 - 25
n-Propyl Mercaptan	107-03-9 203-455-5	Flam. Liq. 2; H225 Acute Tox. 4; H302 Skin Sens. 1B; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	0 - 7
sec-butyl Mercaptan	513-53-1 208-165-2	Flam. Liq. 2; H225 Skin Sens. 1B; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	2 - 4

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

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**SECTION 4: First aid measures****4.1****Description of first-aid measures**

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. 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 : 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 : -18°C (0°F)  
Method: closed cup  
estimated

Autoignition temperature : No data available

**5.1****Extinguishing media**

- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical.
- Unsuitable extinguishing media : High volume water jet.

**5.2****Special hazards arising from the substance or mixture**

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

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

- 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.

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- Fire and explosion protection : Do not spray on a naked flame or any 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****6.1****Personal precautions, protective equipment and emergency procedures**

- 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.

**6.2****Environmental precautions**

- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

**6.3****Methods and materials for containment and cleaning up**

- 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).

**6.4****Reference to other sections**

- Reference to other sections : For personal protection see section 8. For disposal considerations see section 13.

**SECTION 7: Handling and storage****7.1****Precautions for safe handling  
Handling**

- Advice on safe handling : 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 : Do not spray on a naked flame or any incandescent material.

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against fire and explosion

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.

**7.2****Conditions for safe storage, including any incompatibilities****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****8.1****Control parameters  
Ingredients with workplace control parameters****Chevron Phillips Chemical Company LP**

Components	Basis	Value	Control parameters	Note
t-Butyl Mercaptan	Manufacturer	TWA	0,5 ppm,	

**FR**

Composants	Base	Valeur	Paramètres de contrôle	Note
t-Butyl Mercaptan	FR VLE	VME	0,5 ppm, 1,5 mg/m3	Valeurs limites indicatives,
sec-butyl Mercaptan	FR VLE	VME	0,5 ppm, 1,5 mg/m3	Valeurs limites indicatives,

Valeurs limites  
indicatives

**DNEL**

Isopropyl Mercaptan

: End Use: Workers  
Routes of exposure: Inhalation  
Potential health effects: Long-term systemic effects  
Value: 14,5 mg/m3

End Use: Workers  
Routes of exposure: Inhalation  
Potential health effects: Long-term local effects  
Value: 18,6 mg/m3

End Use: Workers  
Routes of exposure: Dermal  
Potential health effects: Long-term systemic effects  
Value: 2,1 mg/kg

End Use: Workers  
Routes of exposure: Dermal  
Potential health effects: Acute local effects  
Value: 1,53 mg/cm2

End Use: Consumers

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	<p>Routes of exposure: Inhalation Potential health effects: Long-term systemic effects Value: 2,57 mg/m<sup>3</sup></p> <p>End Use: Consumers Routes of exposure: Inhalation Potential health effects: Long-term local effects Value: 3,3 mg/m<sup>3</sup></p> <p>End Use: Consumers Routes of exposure: Oral Potential health effects: Long-term systemic effects Value: 0,74 mg/kg</p>
n-Propyl Mercaptan	<p>: End Use: Workers Routes of exposure: Inhalation Potential health effects: Long-term systemic effects Value: 14,5 mg/m<sup>3</sup></p> <p>End Use: Workers Routes of exposure: Inhalation Potential health effects: Long-term local effects Value: 18,6 mg/m<sup>3</sup></p> <p>End Use: Workers Routes of exposure: Dermal Potential health effects: Long-term systemic effects Value: 2,06 mg/kg</p> <p>End Use: Workers Routes of exposure: Dermal Potential health effects: Acute local effects Value: 1,53 mg/cm<sup>2</sup></p> <p>End Use: Consumers Routes of exposure: Inhalation Potential health effects: Long-term systemic effects Value: 2,57 mg/m<sup>3</sup></p> <p>End Use: Consumers Routes of exposure: Inhalation Potential health effects: Long-term local effects Value: 3,3 mg/m<sup>3</sup></p> <p>End Use: Consumers Routes of exposure: Oral Potential health effects: Long-term systemic effects Value: 0,74 mg/kg</p>
PNEC Isopropyl Mercaptan	<p>: Fresh water Value: 0 mg/l</p> <p>Marine water Value: 0 mg/l</p> <p>Fresh water sediment Value: 0,002 mg/kg</p>



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	Marine sediment Value: 0 mg/kg
	Sewage treatment plant Value: 8,805 mg/l
	Soil Value: 0 mg/kg
n-Propyl Mercaptan	: Fresh water Value: 0 mg/l
	Marine water Value: 0 mg/l
	Fresh water sediment Value: 0,001 mg/kg
	Marine sediment Value: 0 mg/kg
	Sewage treatment plant Value: 8,8 mg/l
	Soil Value: 0 mg/kg

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

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

**Personal protective equipment**

Respiratory protection	: 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, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the

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	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. Footwear protecting against chemicals.
Hygiene measures	: 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****9.1****Information on basic physical and chemical properties****Appearance**

Form	: liquid
Physical state	: liquid
Color	: Clear
Odor	: Repulsive

**Safety data**

Flash point	: -18°C (0°F) Method: closed cup estimated
Lower explosion limit	: No data available
Upper explosion limit	: No data available
Oxidizing properties	: No
Autoignition temperature	: No data available
Molecular formula	: Mixture
Molecular weight	: Not applicable
pH	: Not applicable
Freezing point	: No data available
Pour point	No data available
Boiling point/boiling range	: 58,3-70°C (136,9-158°F)
Vapor pressure	: 6,80 PSI at 38°C (100°F) Literature
Relative density	: 0,81

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at 15,6 °C (60,1 °F), estimated

Density	:	810,1 g/l
Water solubility	:	Slightly soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	0,5 cSt at 40°C (104°F)
Relative vapor density	:	1 (Air = 1.0)
Evaporation rate	:	> 1 (N-Butyl Acetate = 1)
Percent volatile	:	> 99 %

**SECTION 10: Stability and reactivity****10.1**

**Reactivity** : Stable under recommended storage conditions.

**10.2**

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

**10.3****Possibility of hazardous reactions**

**Hazardous reactions** : Hazardous reactions: Vapors may form explosive mixture with air.

**10.4**

**Conditions to avoid** : Heat, flames and sparks.

**10.6**

**Hazardous decomposition products** : Carbon oxides  
Sulfur oxides

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

**SECTION 11: Toxicological information****11.1****Information on toxicological effects****SCENTINEL® N Gas Odorant**

**Acute oral toxicity** : Acute toxicity estimate: 3.793 mg/kg  
Method: Calculation method

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**Acute inhalation toxicity** : Acute toxicity estimate: > 20 mg/l  
 Test atmosphere: vapor  
 Method: Calculation method

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**Acute dermal toxicity** : Acute toxicity estimate: > 2.000 mg/kg  
 Method: Calculation method

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

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**Eye irritation** : Vapors may cause irritation to the eyes, respiratory system and the skin.

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**Sensitization** : Causes sensitization.

**Repeated dose toxicity**

t-Butyl Mercaptan : 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 hrs/d, 5 d/wk  
 NOEL: > 196 ppm

Species: Rat, Male and female  
 Sex: Male and female  
 Application Route: oral gavage  
 Dose: 10, 50, 200 mg/kg bw/day  
 Exposure time: 42-53 days  
 Number of exposures: Daily  
 NOEL: 50 mg/kg bw/day  
 Lowest observable effect level: 200 mg/kg bw/day  
 Method: OECD Guideline 422

Species: Rat, Male and female  
 Sex: Male and female  
 Application Route: Inhalation  
 Dose: 25.1, 99.6, 403.4 ppm  
 Exposure time: 13 wks  
 Number of exposures: 6 hrs/d, 5 d/wk  
 NOEL: 99.6 ppm  
 Lowest observable effect level: 403.4 ppm  
 Method: OECD Guideline 413  
 Target Organs: Liver, Kidney, Blood, Upper respiratory tract  
 Information given is based on data obtained from similar substances.

Isopropyl Mercaptan

Species: Rat, male and female  
 Sex: male and female  
 Application Route: Inhalation  
 Exposure time: 13 wks

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Number of exposures: 6hrs/d, 5 d/wk  
 NOEL: 0,367 mg/l 99.6 ppm  
 Lowest observable effect level: 1,488 mg/l 403.4 ppm  
 Method: OECD Test Guideline 413  
 Target Organs: Liver, Kidney, Upper respiratory tract, Blood  
 Information given is based on data obtained from similar substances.

Species: Rat, male and female  
 Sex: male and female  
 Application Route: oral gavage  
 Dose: 10, 50, 200 mg/kg bw/day  
 Exposure time: 42-53 days  
 Number of exposures: Daily  
 NOEL: 50 mg/kg  
 Lowest observable effect level: 200 mg/kg  
 Method: OECD Guideline 422  
 Target Organs: Liver, Blood  
 Information given is based on data obtained from similar substances.

Species: Rat, male and female  
 Sex: male and female  
 Application Route: Inhalation  
 Exposure time: 13 wks  
 Number of exposures: 6hrs/d, 5 d/wk  
 NOEL: >= 196 ppm  
 Method: OECD Test Guideline 413  
 Target Organs: Kidney, Upper respiratory tract, Blood  
 Information given is based on data obtained from similar substances.

**n-Propyl Mercaptan**

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 hrs/d, 5 d/wk  
 NOEL: 196 ppm  
 Method: OECD Test Guideline 413  
 Information given is based on data obtained from similar substances.

**sec-butyl Mercaptan**

Species: Rat, male and female  
 Sex: male and female  
 Application Route: Inhalation  
 Exposure time: 13 wks  
 Number of exposures: 6 hrs/d, 5 d/wk  
 NOEL: 0,367 mg/l 99.6 ppm  
 Lowest observable effect level: 1,488 mg/l 403.4 ppm  
 Method: OECD Guideline 413  
 Target Organs: Blood, Liver, Kidney, Upper respiratory tract

**Genotoxicity in vitro****t-Butyl Mercaptan**

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

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	<p>Test Type: Mouse lymphoma assay            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 476            Result: negative</p>
	<p>Test Type: Sister Chromatid Exchange Assay            Metabolic activation: with and without metabolic activation            Result: negative</p>
Isopropyl Mercaptan	<p>Test Type: reverse mutation assay            Test system: Salmonella typhimurium            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 471            Result: negative</p>
	<p>Test Type: Mouse lymphoma assay            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 490            Result: negative</p>
	<p>Test Type: Micronucleus test            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 487            Result: negative</p>
n-Propyl Mercaptan	<p>Test Type: Ames test            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 471            Result: negative</p>
	<p>Test Type: Cytogenetic assay            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 473            Result: negative</p>
	<p>Test Type: Mouse lymphoma assay            Metabolic activation: with and without metabolic activation            Method: OECD Test Guideline 476            Result: negative            Remarks: Information given is based on data obtained from similar substances.</p>

**Genotoxicity in vivo**

t-Butyl Mercaptan	: Test Type: Mouse micronucleus assay Species: Mouse Dose: 1250, 2500, 5000 mg/kg Method: OECD Test Guideline 474 Result: negative
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**Reproductive toxicity**

t-Butyl Mercaptan	: Species: Rat Sex: male and female Application Route: oral gavage Dose: 10, 50, 200 mg/kg bw/day Number of exposures: Daily Test period: 42 -53 days
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	Method: OECD Guideline 422 NOAEL Parent: 200 mg/kg bw/day NOAEL F1: 50 mg/kg bw/day No adverse effects expected
Isopropyl Mercaptan	Species: Rat Sex: male and female Application Route: oral gavage Dose: 10, 50, 200 mg/kg/bw Exposure time: 42 d Number of exposures: Daily Method: OECD Guideline 422 NOAEL Parent: $\geq$ 200 mg/kg NOAEL F1: 50 mg/kg Information given is based on data obtained from similar substances. No adverse effects expected
sec-butyl Mercaptan	Species: Rat Sex: male and female Application Route: oral gavage Dose: 10, 50, 200 mg/kg bw/d Number of exposures: Daily Test period: 42-50 days Method: OECD Guideline 422 NOAEL Parent: 200 mg/kg NOAEL F1: 50 mg/kg Information given is based on data obtained from similar substances.
<b>Developmental Toxicity</b>	
t-Butyl Mercaptan	: Species: Mouse Application Route: Inhalation Dose: 11, 99, 195 ppm Exposure time: GD 6-16 Number of exposures: 6 hrs/d NOAEL Teratogenicity: $\geq$ 195 ppm NOAEL Maternal: $\geq$ 195 ppm  Species: Rat Application Route: Inhalation Dose: 11, 99, 195 ppm Exposure time: GD6-19 Number of exposures: 6 hrs/d NOAEL Teratogenicity: $\geq$ 195 ppm NOAEL Maternal: $\geq$ 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
Isopropyl Mercaptan	Species: Rat Application Route: Inhalation Dose: 11, 99, 195 ppm

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Exposure time: 6h/d  
 Test period: GD 9 - 19  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity:  $\geq$  195 ppm  
 NOAEL Maternal:  $\geq$  195 ppm  
 Information given is based on data obtained from similar substances.

Species: Mouse  
 Application Route: Inhalation  
 Dose: 11, 99, 195 ppm  
 Exposure time: 6h/d  
 Test period: GD 9 - 19  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity:  $\geq$  195 ppm  
 NOAEL Maternal:  $\geq$  195 ppm  
 Information given is based on data obtained from similar substances.

sec-butyl Mercaptan

Species: Rat  
 Application Route: Inhalation  
 Dose: 11, 99, 195 ppm  
 Exposure time: GD 6-16  
 Number of exposures: 6 hrs/d  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity:  $\geq$  195 ppm  
 NOAEL Maternal:  $\geq$  195 ppm  
 Information given is based on data obtained from similar substances.

Species: Mouse  
 Application Route: Inhalation  
 Dose: 11, 99, 195 ppm  
 Exposure time: GD 6-16  
 Number of exposures: 6 hrs/d  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity:  $\geq$  195 ppm  
 NOAEL Maternal:  $\geq$  195 ppm  
 Information given is based on data obtained from similar substances.

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

**CMR effects**

t-Butyl Mercaptan : Carcinogenicity: Not available  
 Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects  
 Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Isopropyl Mercaptan

Carcinogenicity: Not available  
 Mutagenicity: In vitro tests did not show mutagenic effects  
 Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.



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n-Propyl Mercaptan

Carcinogenicity: Not available  
 Mutagenicity: In vitro tests did not show mutagenic effects  
 Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments., No toxicity to reproduction

**SCENTINEL® N Gas Odorant  
Further information**

: Solvents may degrease the skin. High concentration of vapors may cause irritation to eyes and respiratory system and produce narcotic effects.

**SECTION 12: Ecological information****12.1****Toxicity****Toxicity to fish**

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

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 LC50: 1,3 mg/l  
 Exposure time: 96 h  
 Species: Pimephales promelas (fathead minnow)  
 semi-static test Analytical monitoring: yes  
 Test substance: yes  
 Method: OECD Test Guideline 203  
 Toxic to aquatic organisms.

sec-butyl Mercaptan LC50: 8,5 mg/l  
 Exposure time: 96 h  
 Species: Oncorhynchus mykiss (rainbow trout)  
 static test Analytical monitoring: yes  
 Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**

t-Butyl Mercaptan : EC50: 6,7 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 static test Method: OECD Test Guideline 202

Isopropyl Mercaptan EC50: 0,25 - 0,5 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 static test Test substance: yes  
 Method: OECD Test Guideline 202



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**Toxicity to bacteria**

Isopropyl Mercaptan	: EC50: 880,5 mg/l Exposure time: 3 h Respiration inhibition Method: OECD Test Guideline 209
n-Propyl Mercaptan	EC50: 880,5 mg/l Exposure time: 3 h Respiration inhibition Method: OECD Test Guideline 209 Information given is based on data obtained from similar substances.

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

## Biodegradability

t-Butyl Mercaptan	: aerobic Result: Not readily biodegradable. 6 % Testing period: 63 d Method: OECD Test Guideline 301
Isopropyl Mercaptan	: aerobic Result: Not readily biodegradable. 0 % Testing period: 28 Days Method: OECD Test Guideline 301D
n-Propyl Mercaptan	: aerobic Result: Not readily biodegradable. 17 % Testing period: 28 Days Method: OECD Test Guideline 301
sec-butyl Mercaptan	: aerobic Result: Not readily biodegradable. 6 % Testing period: 63 d Method: OECD Test Guideline 301F Information given is based on data obtained from similar substances.

**12.3****Bioaccumulative potential**

## Bioaccumulation

t-Butyl Mercaptan	: Bioconcentration factor (BCF): 12 Method: QSAR modeled data This material is not expected to bioaccumulate.
Isopropyl Mercaptan	: Bioconcentration factor (BCF): 6 Method: QSAR modeled data This material is not expected to bioaccumulate.
n-Propyl Mercaptan	: This material is not expected to bioaccumulate.

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sec-butyl Mercaptan : Bioconcentration factor (BCF): 12,67  
 Method: QSAR modeled data  
 This material is not expected to bioaccumulate.

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

Mobility

t-Butyl Mercaptan : Method: Calculation, Mackay Level III Fugacity Model  
 The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

Isopropyl Mercaptan : Method: Calculation, Mackay Level III Fugacity Model  
 The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

n-Propyl Mercaptan : Method: Calculation, Mackay Level III Fugacity Model  
 The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

sec-butyl Mercaptan : Method: Calculation, Mackay Level III Fugacity Model  
 The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

**12.5****Results of PBT and vPvB assessment**

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6****Other adverse effects**

Additional ecological information : Very toxic to aquatic life with long lasting effects.

**Ecotoxicology Assessment**

Short-term (acute) aquatic hazard

t-Butyl Mercaptan : Toxic to aquatic life.

Isopropyl Mercaptan : Very toxic to aquatic life.

n-Propyl Mercaptan : Very toxic to aquatic life.

sec-butyl Mercaptan : Very toxic to aquatic life.

Long-term (chronic) aquatic hazard

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.

sec-butyl Mercaptan : Very toxic to aquatic life with long lasting effects.

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**SECTION 13: Disposal considerations****13.1****Waste treatment methods**

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

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

- Product : 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****14.1 - 14.7****Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the 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, ISOPROPYL MERCAPTAN), 3, II, (-18 °C c.c.), MARINE POLLUTANT, (N-PROPYL 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, (N-PROPYL MERCAPTAN, ISOPROPYL MERCAPTAN)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF**

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**DANGEROUS GOODS (EUROPE)**

33,UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, ENVIRONMENTALLY HAZARDOUS, (N-PROPYL MERCAPTAN, ISOPROPYL MERCAPTAN)

**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, (N-PROPYL MERCAPTAN, ISOPROPYL MERCAPTAN)

**Maritime transport in bulk according to IMO instruments**

**SECTION 15: Regulatory information****15.1****Safety, health and environmental regulations/legislation specific for the substance or mixture  
National legislation**

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

**Water hazard class (Germany)** : WGK 3 highly water endangering

**15.2****Major Accident Hazard  
Legislation**

- : 96/82/EC Update:  
Highly flammable  
7b  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t
- : 96/82/EC Update:  
Dangerous for the environment  
9a  
Quantity 1: 100 t  
Quantity 2: 200 t
- : ZEU\_SEVES3 Update:  
FLAMMABLE LIQUIDS  
P5c  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t
- : ZEU\_SEVES3 Update:  
ENVIRONMENTAL HAZARDS  
E1  
Quantity 1: 100 t  
Quantity 2: 200 t

**Notification status**

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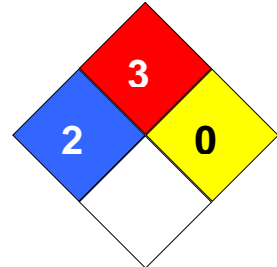
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Europe REACH	:	A substance or substances in this product is not registered or notified to be registered. Importation or manufacture of this product is still permitted provided that it does not exceed the REACH minimum threshold quantity of the non-regulated substances.
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 NDSL	:	This product contains one or several components listed in the Canadian NDSL.
Other AIIIC	:	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	:	A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	:	Not in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	Not 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 : 99720

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

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

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

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.