n-Butyl Mercaptan


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

1.1

Product information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Legal Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Butyl Mercaptan</td>
<td>109-79-5</td>
<td>203-705-3</td>
<td>Chevron Phillips Chemicals International NV</td>
</tr>
</tbody>
</table>

1.2

Relevant identified uses of the substance or mixture and uses advised against

Relevant Identified Uses Supported: Intermediate: The substance is registered as a Transported Isolated Intermediate with Strictly Controlled Conditions (SCC) defined in Article 18(4) of Regulation EC No. 1907/2006 and must therefore be handled as such.

1.3

Details of the supplier of the safety data sheet

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

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

SDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
n-Butyl Mercaptan

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Email:sds@cpchem.com

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
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431

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

SECTION 2: Hazards identification

2.1

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable liquids, Category 2
Acute toxicity, Category 4
Skin sensitization, Sub-category 1B
Short-term (acute) aquatic hazard, Category 1
Long-term (chronic) aquatic hazard, Category 1

H225: Highly flammable liquid and vapor.
H302: Harmful if swallowed.
H317: May cause an allergic skin reaction.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

2.2

Labeling (REGULATION (EC) No 1272/2008)

Signal Word : Danger

Hazard pictograms :

Hazard Statements :
H225 Highly flammable liquid and vapor.
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
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.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
**SAFETY DATA SHEET**

**n-Butyl Mercaptan**

Version 1.8  
Revision Date 2019-05-15

<table>
<thead>
<tr>
<th>P272</th>
<th>Contaminated work clothing should not be allowed out of the workplace.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P273</td>
<td>Avoid release to the environment.</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves.</td>
</tr>
</tbody>
</table>

**Response:**

<table>
<thead>
<tr>
<th>P301 + P310</th>
<th>IF SWALLOWED: Immediately call a POISON CENTER/doctor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P302 + P352</td>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
</tr>
<tr>
<td>P331</td>
<td>Do NOT induce vomiting.</td>
</tr>
<tr>
<td>P321</td>
<td>Specific treatment (see supplemental first aid instructions on this label).</td>
</tr>
<tr>
<td>P333 + P313</td>
<td>If skin irritation or rash occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P370 + P378</td>
<td>In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.</td>
</tr>
</tbody>
</table>

Hazardous ingredients which must be listed on the label:

- 109-79-5 n-Butyl Mercaptan

**Additional Labeling:**

EUH208 Contains: t-Butyl Mercaptan, t-Amyl Mercaptan.  
May produce an allergic reaction.

### SECTION 3: Composition/information on ingredients

**3.1 - 3.2 Substance or Mixture**

| Synonyms | Thiobutyl Alcohol  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-Butanethiol</td>
</tr>
<tr>
<td></td>
<td>NBM</td>
</tr>
<tr>
<td></td>
<td>Normal Butyl Mercaptan</td>
</tr>
<tr>
<td></td>
<td>Butyl Mercaptan</td>
</tr>
</tbody>
</table>

| Molecular formula | C4H10S |

**Hazardous ingredients**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration [wt%]</th>
</tr>
</thead>
</table>
| n-Butyl Mercaptan | 109-79-5| 203-705-3| Flam. Liq. 2; H225  
|                   |         |        | Acute Tox. 4; H302  
|                   |         |        | Skin Sens. 1B; H317  
|                   |         |        | Aquatic Acute 1; H400  
|                   |         |        | Aquatic Chronic 1; H410 |
|                   | 98,5 - 100 |

| 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  
|                   |          | Skin Sens. 1B; H317  |
|                   |          | 0 - 1,5 |

| t-Butyl Mercaptan | 75-66-1  
|                  | Flam. Liq. 2; H225  
|                  | 0 - 1 |

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**n-Butyl Mercaptan**

|          | 200-890-2 | Aquatic Acute 2; H401  
|          | Skin Sens. 1; H317  
|          | Aquatic Chronic 2; H411  
| t-Amyl Mercaptan | 1679-09-0  
|          | 216-843-4  
|          | Flam. Liq. 2; H225  
|          | Skin Sens. 1; H317  
|          | 0 - 0,1  

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

### 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**: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

**If swallowed**: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

### SECTION 5: Firefighting measures

**Flash point**: 3,3 °C (37,9 °F)  
**Method**: ASTM D - 1310

**Autoignition temperature**: 272 °C (522 °F)  
**estimated**

#### 5.1 Extinguishing media

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

**Unsuitable extinguishing media**: High volume water jet.

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

**Specific hazards during firefighting**: 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.

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

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
n-Butyl Mercaptan

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. 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

<table>
<thead>
<tr>
<th>Components</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butyl Mercaptan</td>
<td>Manufacturer</td>
<td>TWA</td>
<td>0,5 ppm,</td>
<td></td>
</tr>
</tbody>
</table>

SK

Zložky

<table>
<thead>
<tr>
<th>n-Butyl Mercaptan</th>
<th>SK OEL</th>
<th>NPEL priemerný</th>
<th>0,5 ppm, 1,9 mg/m³</th>
<th></th>
</tr>
</thead>
</table>

SI

Sestavine

| n-Butyl Mercaptan | SI OEL | MV | 0,5 ppm, 1,9 mg/m³ | Y,           |

Y Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in BAT vrednosti.

PT

Componentes

| n-Butyl Mercaptan | PT OEL | VLE-MP | 0,5 ppm,           | imitação do TRS |

NO

Komponenter

| n-Butyl Mercaptan | FOR-2011-12-06-1358 | GV | 0,5 ppm, 1,5 mg/m³ |               |

IE

Components

| n-Butyl Mercaptan | IE OEL | OELV - 8 hrs (TWA) | 0,5 ppm, 1,8 mg/m³ |               |

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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

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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 according to the amount and concentration of the dangerous substance at the workplace. 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.

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: 3,3 °C (37,9 °F)
Method: ASTM D - 1310
Lower explosion limit: 1,4 %(V)
Upper explosion limit: 11,3 %(V)
Oxidizing properties: no
Autoignition temperature: 272 °C (522 °F)
estimated
Molecular formula: C4H10S
Molecular weight: 90,2 g/mol
pH: Not applicable
Freezing point: -115 °C (-175 °F)
**n-Butyl Mercaptan**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pour point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>96 - 110 °C (205 - 230 °F)</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>1,60 PSI</td>
</tr>
<tr>
<td></td>
<td>at 38 °C (100 °F)</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.842</td>
</tr>
<tr>
<td></td>
<td>at 15.6 °C (60.1 °F)</td>
</tr>
<tr>
<td>Density</td>
<td>840 g/l</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Negligible</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>0.497 cP</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>2</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>1</td>
</tr>
<tr>
<td>Percent volatile</td>
<td>&gt; 99 %</td>
</tr>
</tbody>
</table>

**SECTION 10: Stability and reactivity**

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: Hazardous polymerization does not occur.

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

   Hazardous reactions: Vapors may form explosive mixture with air.

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

10.5 **Materials to avoid**: May react with oxygen and strong oxidizing agents, such as...
# n-Butyl Mercaptan

## 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

**n-Butyl Mercaptan**

#### Acute oral toxicity
- Acute toxicity estimate: 1.523 mg/kg
- Method: Calculation method

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

#### Acute dermal toxicity
- sec-butyl Mercaptan: LD50: > 2.000 mg/kg
  - Species: Rat

#### Skin irritation
- n-Butyl Mercaptan: May cause skin irritation and/or dermatitis.

#### Eye irritation
- n-Butyl Mercaptan: Vapors may cause irritation to the eyes, respiratory system and the skin.

#### Sensitization
- n-Butyl Mercaptan: Causes sensitization.

#### Repeated dose toxicity
- n-Butyl Mercaptan:
  - Species: Rat
  - Application Route: Inhalation
  - Dose: 0, 9, 70, 150 ppm
  - Exposure time: 13 wk
  - Number of exposures: 6 h/d, 5 d/wk
  - NOEL: 9 ppm
  - Lowest observable effect level: 70 ppm

- 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
n-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.

Genotoxicity in vitro

n-Butyl Mercaptan:
Test Type: Ames test
Result: negative

Test Type: Mouse lymphoma assay
Result: Ambiguous

Test Type: Sister Chromatid Exchange Assay
Result: negative

t-Butyl Mercaptan:
Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: negative

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

Test Type: Ames test
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo

t-Butyl Mercaptan:
Test Type: Mouse micronucleus assay
Species: Mouse
Dose: 1250, 2500, 5000 mg/kg
Method: Mutagenicity (micronucleus test)
Result: negative

Reproductive toxicity

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.

Reproductive toxicity of 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
- Method: OECD Guideline 422
- NOAEL Parent: 200 mg/kg bw/day
- NOAEL F1: 50 mg/kg bw/day

No adverse effects expected

Developmental Toxicity

n-Butyl Mercaptan
- Species: Rat
- Application Route: Inhalation
- Dose: 0, 10, 68, 152 ppm
- Number of exposures: 6 h/d
- Test period: GD 6-19
- NOAEL Teratogenicity: > 152 ppm
- NOAEL Maternal: > 152 ppm

Species: Mouse
- Application Route: Inhalation
- Dose: 0, 10, 68, 152 ppm
- Number of exposures: 6 h/d
- Test period: GD 6-16
- NOAEL Maternal: 10 ppm

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: > = 195 ppm
- NOAEL Maternal: > = 195 ppm

Information given is based on data obtained from similar substances.
n-Butyl Mercaptan

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: > = 195 ppm
NOAEL Maternal: > = 195 ppm
Information given is based on data obtained from similar substances.

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

n-Butyl Mercaptan
Aspiration toxicity: May be harmful if swallowed and enters airways.

CMR effects
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

n-Butyl Mercaptan
Further information: Solvents may degrease the skin.

SECTION 12: Ecological information

12.1
Toxicity

Toxicity to fish
**n-Butyl Mercaptan**

**LC50**:
- 2,4 mg/l
  - Exposure time: 96 h
  - Species: Oncorhynchus mykiss (rainbow trout)
  - Information given is based on data obtained from similar substances.

**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

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

### Toxicity to daphnia and other aquatic invertebrates

**n-Butyl Mercaptan**
- EC50: 0,38 mg/l
  - Exposure time: 48 h
  - Species: Daphnia magna (Water flea)
  - Information given is based on data obtained from similar substances.

- EC50: 0,020 mg/l
  - Exposure time: 48 h
  - Species: Daphnia magna (Water flea)
  - Immobilization Method: OECD Test Guideline 202

**sec-butyl Mercaptan**
- 0,56 mg/l
  - Exposure time: 48 h
  - Species: Daphnia magna (Water flea)
  - Immobilization Method: OECD Test Guideline 202
  - Information refers to the main ingredient.

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

### Toxicity to algae

**n-Butyl Mercaptan**
- EC50: 3,0 mg/l
  - Exposure time: 96 h
  - Species: Selenastrum capricornutum (algae)
  - Information given is based on data obtained from similar substances.

- EC50: 0,49 mg/l
  - Exposure time: 72 h
  - Species: Pseudokirchneriella subcapitata (microalgae)
  - Growth inhibition Method: OECD Test Guideline 201

**sec-butyl Mercaptan**
- EC50: 3,4 mg/l
  - Exposure time: 72 h
  - Species: Pseudokirchneriella subcapitata (green algae)
  - Growth inhibition Method: OECD Test Guideline 201
t-Butyl Mercaptan  
EC50: 24 mg/l  
Exposure time: 72 h  
Species: Pseudokirchneriella subcapitata (green algae)  
Method: OECD Test Guideline 201

**M-Factor**  
butane-2-thiol  
M-Factor (Acute Aquat. Tox.) : 1  
M-Factor (Chron. Aquat. Tox.) : 1

12.2  
**Persistence and degradability**  
Biodegradability : Expected to be biodegradable

12.3  
**Bioaccumulative potential**  
Elimination information (persistence and degradability)

Bioaccumulation  
t-Butyl Mercaptan  
Bioconcentration factor (BCF): 12  
Bioaccumulation is unlikely.

12.4  
**Mobility in soil**  
Mobility  
t-Butyl Mercaptan  
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  
t-Butyl Mercaptan : Non-classified PBT substance, Non-classified vPvB substance

12.6  
**Other adverse effects**  
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  
n-Butyl Mercaptan : Very toxic to aquatic life.  
sec-butyl Mercaptan : Very toxic to aquatic life.  
t-Butyl Mercaptan : Toxic to aquatic life.

Long-term (chronic) aquatic hazard  
n-Butyl Mercaptan : Very toxic to aquatic life with long lasting effects.
**SAFETY DATA SHEET**

**n-Butyl Mercaptan**

Version 1.8  
Revision Date 2019-05-15

- **sec-butyl Mercaptan**: Very toxic to aquatic life with long lasting effects.
- **t-Butyl Mercaptan**: Toxic to aquatic life with long lasting effects.

**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)**

UN2347, BUTYL MERCAPTAN, 3, II

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN2347, BUTYL MERCAPTAN, 3, II, (3,3 °C), MARINE POLLUTANT, (N-BUTYL MERCAPTAN)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN2347, BUTYL MERCAPTAN, 3, II

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

UN2347, BUTYL MERCAPTAN, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (N-BUTYL MERCAPTAN)
n-Butyl Mercaptan

Version 1.8

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN2347, BUTYL MERCAPTAN, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-BUTYL MERCAPTAN)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN2347, BUTYL MERCAPTAN, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-BUTYL MERCAPTAN)

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

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation

15.2 Chemical Safety Assessment
Components : butane-1-thiol  A Chemical Safety Assessment is not required for this substance.

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

: 96/82/EC Update: 2003
  Highly flammable
  7b
  Quantity 1: 5,000 t
  Quantity 2: 50,000 t

Notification status
Europe REACH : On the inventory, or in compliance with the inventory
United States of America (USA) TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : On the inventory, or in compliance with the inventory
Japan ENCS : On the inventory, or in compliance with the inventory
Korea KECI : On the inventory, or in compliance with the inventory
Philippines PICCS : On the inventory, or in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory
SECTION 16: Other information

NFPA Classification :
- Health Hazard: 2
- Fire Hazard: 3
- Reactivity Hazard: 0

Further information

Legacy SDS Number : 47670

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

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet

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

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.
H400  Very toxic to aquatic life.
H401  Toxic to aquatic life.
H410  Very toxic to aquatic life with long lasting effects.
H411  Toxic to aquatic life with long lasting effects.