SAFETY DATA SHEET

n-Butyl Mercaptan
Version 1.7
Revision Date 2017-10-11

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

Product information
Product Name: n-Butyl Mercaptan
Material: 1078953, 1021482, 1021492, 1021491, 1021490, 1021489, 1021488, 1021483, 1021481, 1024804, 1024805, 1021486, 1021485, 1027453
Use: Chemical intermediate
Company: Chevron Phillips Chemical Company LP
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:
Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14.583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431
Responsible Department: Product Safety and Toxicology Group
E-mail address: SDS@CPChem.com
Website: www.CPChem.com

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.

Classification: Flammable liquids, Category 2
Acute toxicity, Category 4, Oral
Skin sensitization, Sub-category 1B

Labeling

SDS Number: 100000013394
1/16
SAFETY DATA SHEET

n-Butyl Mercaptan

Version 1.7

Revision Date 2017-10-11

Symbol(s) : 

Signal Word : Danger

Hazard Statements : H225: Highly flammable liquid and vapor.
H302: Harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
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.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/eye protection/face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: 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 to extinguish.

Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

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

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.
n-Butyl Mercaptan

SECTION 3: Composition/information on ingredients

Synonyms: Thioctyl Alcohol
1-Butanethiol
NBM
Normal Butyl Mercaptan
Butyl Mercaptan

Molecular formula: C4H10S

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Butyl Mercaptan</td>
<td>109-79-5</td>
<td>98.5 - 100</td>
</tr>
<tr>
<td>sec-Butyl Mercaptan</td>
<td>513-53-1</td>
<td>0 - 1.5</td>
</tr>
<tr>
<td>t-Butyl Mercaptan</td>
<td>75-66-1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>t-Amyl Mercaptan</td>
<td>1679-09-0</td>
<td>0 - 0.1</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

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

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

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

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

If swallowed: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. 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

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

Unsuitable extinguishing media: High volume water jet.

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

Special protective: Wear self-contained breathing apparatus for firefighting if
n-Butyl Mercaptan

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. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
Storage

Requirements for storage areas and containers:

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

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Butyl Mercaptan</td>
<td>Manufacturer</td>
<td>TWA</td>
<td>0.5 ppm.</td>
<td></td>
</tr>
</tbody>
</table>

US

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Butyl Mercaptan</td>
<td>ACGIH</td>
<td>TWA</td>
<td>0.5 ppm,</td>
<td>URT irr,</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>10 ppm, 35 mg/m³</td>
<td>(b).</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>0.5 ppm, 1.5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

(b) The value in mg/m³ is approximate.

URT irr Upper Respiratory Tract irritation

Immediately Dangerous to Life or Health Concentrations (IDLH)

<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Butyl Mercaptan</td>
<td>109-79-5</td>
<td>Immediately Dangerous to Life or Health Concentration Value 500 ppm</td>
<td>1995-03-01</td>
</tr>
</tbody>
</table>

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

SECTION 9: Physical and chemical properties

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)
Pour point: No data available
Boiling point/boiling range: 96 - 110 °C (205 - 230 °F)
Vapor pressure: 1.60 PSI
at 38 °C (100 °F)
Relative density: 0.842
at 15.6 °C (60.1 °F)
n-Butyl Mercaptan

Density : 840 g/l
Water solubility : Negligible
Partition coefficient: n-octanol/water : No data available
Viscosity, dynamic : 0.497 cP
Relative vapor density : 2
(Air = 1.0)
Evaporation rate : 1
Percent volatile : > 99 %

SECTION 10: Stability and reactivity

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

Possibility of hazardous reactions
Conditions to avoid : Heat, flames and sparks.
Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous decomposition products : Carbon oxides
Sulfur oxides
Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

n-Butyl Mercaptan
Acute oral toxicity : Acute toxicity estimate: 1,523 mg/kg
Method: Calculation method

Acute toxicity estimate: 1,523 mg/kg
Method: Calculation method

n-Butyl Mercaptan
Acute inhalation toxicity : Acute toxicity estimate: > 40 mg/l
Test atmosphere: vapor
Method: Calculation method

Acute dermal toxicity
sec-butyl Mercaptan : LD50: >2000 milligram per kilogram
Species: Rat
## n-Butyl Mercaptan

### Skin irritation
- May cause skin irritation and/or dermatitis.

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

### Sensitization
- 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

### 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
n-Butyl Mercaptan

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.

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.

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
# n-Butyl Mercaptan

**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.

**t-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

**Species:** Rat  
**Application Route:** Inhalation  
**Dose:** 11, 99, 195 ppm  
**Exposure time:** GD 6-19  
**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

## Aspiration toxicity

**n-Butyl Mercaptan**  
May be harmful if swallowed and enters airways.

## CMR effects

**t-Butyl Mercaptan**  
Carcinogenicity: Not available
n-Butyl Mercaptan

Further information

Mutagenicity: Did not show mutagenic effects in animal experiments.
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: No toxicity to reproduction.

Solvents may degrease the skin.

SECTION 12: Ecological information

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

static test

Analytical monitoring: yes
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.

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.
n-Butyl Mercaptan

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sec-butyl Mercaptan
EC50: 3.4 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

Exposure time:
72 h

Species:
Pseudokirchneriella subcapitata (green algae)

Growth inhibition Method: OECD Test Guideline 201

M-Factor
butane-2-thiol

M-Factor (Acute Aquat. Tox.) 1
M-Factor (Chron. Aquat. Tox.) 1

Elimination information (persistence and degradability)

Bioaccumulation

Bioconcentration factor (BCF): 12
Bioaccumulation is unlikely.

Biodegradability

Expected to be biodegradable

Ecotoxicology Assessment

Acute aquatic toxicity
n-Butyl Mercaptan
Very toxic to aquatic life.

sec-butyl Mercaptan
Very toxic to aquatic life.

t-Butyl Mercaptan
Toxic to aquatic life.

Chronic aquatic toxicity
n-Butyl Mercaptan
Very toxic to aquatic life with long lasting effects.

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

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

Results of PBT assessment

Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.
**n-Butyl Mercaptan**

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)**

UN2347, BUTYL MERCAPTANS, 3, II

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

UN2347, BUTYL MERCAPTANS, 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)

**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)
n-Butyl Mercaptan

Version 1.7

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

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 : 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.

SARA 313 Ingredients : 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 112 (40 CFR 61).

The following chemical(s) are listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F): Ethyl Mercaptan - 75-08-1

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).
n-Butyl Mercaptan

US State Regulations

Pennsylvania Right To Know
: n-Butyl Mercaptan - 109-79-5
   sec-butyl Mercaptan - 513-53-1

New Jersey Right To Know
: n-Butyl Mercaptan - 109-79-5
   sec-butyl Mercaptan - 513-53-1

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
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.

<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
</tr>
</thead>
<tbody>
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<td>ACGIH</td>
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<td>AICS</td>
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