SAFETY DATA SHEET

Sulfole® 120B Mercaptan
Version 5.3
Revision Date 2018-03-21

according to GB/T 16483 and GB/T 17519

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

Product information
Product Name: Sulfole® 120B Mercaptan
Material: 1116064, 1108796, 1105436, 1101538, 1101537

Use: Polymer Molecular Weight Modification

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

Local: Chevron Phillips Chemicals (Shanghai) Corporation
Room 1810-1812, Shanghai Mart,
2299 Yan An Road (W),
Shanghai, PRC 200336

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

Classification of the substance or mixture
GHS Classification and Labeling: Follow GB 13690, GB 15258 and GB 30000.2 to GB 30000.29 (GHS 2011)

Emergency Overview

SDS Number:100000014573  1/15
SAFETY DATA SHEET

Sulfole® 120B Mercaptan

Version 5.3

Warning

Form: Liquid   Physical state: Liquid   Color: Colorless   Odor: Repulsive

Hazards: Combustible liquid. Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. May be harmful if swallowed and enters airways. May cause long lasting harmful effects to aquatic life.

Classification

- Flammable liquids, Category 4
- Skin corrosion/irritation, Category 2
- Serious eye damage/eye irritation, Category 2A
- Skin sensitization, Category 1
- Aspiration hazard, Category 2
- Chronic aquatic toxicity, Category 4

Labeling

Symbol(s): §

Signal Word: Warning

Hazard Statements: H227: Combustible liquid.
- H305: May be harmful if swallowed and enters airways.
- H315: Causes skin irritation.
- H317: May cause an allergic skin reaction.
- H319: Causes serious eye irritation.
- H413: May cause long lasting harmful effects to aquatic life.

Precautionary Statements

Prevention:
- P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264: Wash skin thoroughly after handling.
- P272: Contaminated work clothing must not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves/eye protection/face protection.

Response:
- P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
- P302 + P352: IF ON SKIN: Wash with plenty of water.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P331: Do NOT induce vomiting.
- P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
- P337 + P313: If eye irritation persists: Get medical advice/attention.
- P362 + P364: Take off contaminated clothing and wash it 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.

SECTION 3: Composition/information on ingredients

Synonyms:
- TDM
- Tertiary Dodecyl Mercaptan

Molecular formula: C12H26S

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. / EINECS-No.</th>
<th>Concentration [wt%]</th>
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<tbody>
<tr>
<td>tert-Dodecanethiol</td>
<td>25103-58-6</td>
<td>98 - 100</td>
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</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 skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

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

If swallowed:
Keep respiratory tract clear. 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:
- 92 °C (198 °F)
  Method: Tag closed cup

Autoignition temperature:
No data available

Suitable extinguishing media:
Carbon dioxide (CO2).

Unsuitable extinguishing media:
High volume water jet.
## SECTION 6: Accidental release measures

**Personal precautions**: Use personal protective equipment. Ensure adequate ventilation.

**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). Keep in suitable, closed containers for disposal.

## SECTION 7: Handling and storage

### Handling

**Advice on safe handling**: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.

**Advice on protection against fire and explosion**: Do not spray on an open flame or any other incandescent material. 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.

SECTON 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>
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</thead>
<tbody>
<tr>
<td>tert-Dodecanethiol</td>
<td>Manufacturer</td>
<td>TWA</td>
<td>0.1 ppm.</td>
<td></td>
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</tbody>
</table>

Chevron Phillips Chemical Company LP

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 workplace 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 NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: 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. Air-Purifying Respirator for Dusts and Mists. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection: Eye wash bottle with pure water. Tightly fitting safety goggles. Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection: Choose body protection according to the amount and concentration of the dangerous substance at the workplace. Wear as appropriate:. Protective suit. Safety shoes.

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: Colorless
- Odor: Repulsive

**Safety data**
- Flash point: 92 °C (198 °F)  
  Method: Tag closed cup
- Lower explosion limit: No data available
- Upper explosion limit: No data available
- Oxidizing properties: no
- Autoignition temperature: No data available
- Molecular formula: C12H26S
- Molecular weight: 202.44 g/mol
- pH: No data available
- Pour point: No data available
- Boiling point/boiling range: 234 °C (453 °F)
- Vapor pressure: 4.00 Pa  
  at 24 °C (75 °F)
- Relative density: 0.8664  
  at 16 °C (61 °F)
- Density: 0.9 g/cm³
- Water solubility: 0.00393 mg/l  
  Method: OECD Test Guideline 105
- Partition coefficient: n-octanol/water: No data available
- Viscosity, dynamic: 4 mPa.s
- Relative vapor density: 3  
  (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

Acute oral toxicity
tert-Dodecanethiol : LD50: > 2,000 mg/kg
Species: Rat
Sex: female
Method: OECD Test Guideline 423

Acute inhalation toxicity
tert-Dodecanethiol : LC50: > 1.97 milligram per liter
Exposure time: 4 h
Species: Rat
Sex: male and female
Method: OECD Test Guideline 403
Information given is based on data obtained from similar substances.

Acute dermal toxicity
tert-Dodecanethiol : LD50: >2000 mg/kg
Species: Rat
Sex: male
Method: OECD Test Guideline 402
Information given is based on data obtained from similar substances.

Skin irritation
tert-Dodecanethiol : Skin irritation

Eye irritation
tert-Dodecanethiol : Eye irritation
**Sensitization**

tert-Dodecanethiol : The product is a skin sensitizer, sub-category 1B.

**Repeated dose toxicity**

tert-Dodecanethiol : Species: Rat, male
  Sex: male
  Application Route: Inhalation
  Dose: 0, 26, 98 ppm
  Exposure time: 4 wk
  Number of exposures: 6 h/d, 5 d/wk
  Lowest observable effect level: 26 ppm
  Method: OECD Test Guideline 412
  Target Organs: Kidney, Liver
Species: Rat, female  
Sex: female  
Application Route: Inhalation  
Dose: 0, 26, 98 ppm  
Exposure time: 4 wk  
Number of exposures: 6 h/d, 5 d/wk  
NOEL: 26 ppm  
Method: OECD Guideline 412  
Target Organs: Liver, Kidney

Species: Dog, male and female  
Sex: male and female  
Application Route: Inhalation  
Dose: 0, 25, 106 ppm  
Exposure time: 4 wk  
Number of exposures: 6 h/d, 5 d/wk  
NOEL: 25 ppm  
Lowest observable effect level: 109 ppm  
Method: OECD Test Guideline 412  
Target Organs: Liver

Species: Mouse, male and female  
Sex: male and female  
Application Route: Inhalation  
Dose: 0, 25, 109 ppm  
Exposure time: 4 wk  
Number of exposures: 6 h/d, 5 d/wk  
Lowest observable effect level: 25 ppm  
Method: OECD Test Guideline 412  
Target Organs: Liver

Species: Rat, male  
Sex: male  
Application Route: oral gavage  
Dose: 10, 50, 250 mg/kg  
Exposure time: 35 d  
Number of exposures: once daily  
NOEL: 50 mg/kg  
Method: OECD Guideline 422  
Target Organs: Liver, spleen  
Information given is based on data obtained from similar substances.

Species: Rat, female  
Sex: female  
Application Route: oral gavage  
Dose: 10, 50, 250 mg/kg  
Exposure time: 53 d  
Number of exposures: once daily  
NOEL: 50 mg/kg  
Method: OECD Guideline 422  
Target Organs: Liver, spleen  
Information given is based on data obtained from similar substances.

Species: Rat, male  
Sex: male  
Application Route: Inhalation  
Dose: 5, 25, 100 ppm  
Exposure time: 90 d
**Reproductive toxicity**

**tert-Dodecanethiol**
- Species: Rat
- Sex: male
- Application Route: oral gavage
- Dose: 10, 50, 250 mg/kg/d
- Exposure time: 35 d
- Number of exposures: Daily
- Method: OECD Guideline 422
- NOAEL Parent: ≥ 250 mg/kg
- Information given is based on data obtained from similar substances.

- Species: Rat
- Sex: female
- Application Route: oral gavage
- Dose: 10, 50, 250 mg/kg/d
- Exposure time: 53 d
- Number of exposures: Daily
- Method: OECD Guideline 422
- NOAEL Parent: 50 mg/kg
- NOAEL F1: 50 mg/kg
- Information given is based on data obtained from similar substances.
- Decrease in Delivery Index

**Developmental Toxicity**
Sulfole® 120B Mercaptan

tert-Dodecanethiol
Species: Rat
Application Route: Inhalation
Dose: 0, 22.7, 88.6 ppm
Number of exposures: 6 hrs/d
Test period: GD 6-19
Method: OECD Guideline 414
NOAEL Teratogenicity: >= 88.6 ppm
No adverse effects expected

Species: Mouse
Application Route: Inhalation
Dose: 0, 22.7, 88.6 ppm
Number of exposures: 6 hrs/d
Test period: GD 6-19
Method: OECD Guideline 414
NOAEL Teratogenicity: >= 88.6 ppm
No adverse effects expected

Sulfole® 120B Mercaptan
Aspiration toxicity: May be harmful if swallowed and enters airways.

CMR effects

tert-Dodecanethiol
Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: No toxicity to reproduction

Sulfole® 120B Mercaptan
Further information: Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

tert-Dodecanethiol
LL50: > 100 mg/l
Exposure time: 96 h
Species: Danio rerio (Zebra Fish)
static test Method: OECD Test Guideline 203
No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates

tert-Dodecanethiol
EC50: > 0.056 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
semi-static test Method: OECD Test Guideline 202
No toxicity at the limit of solubility.

Toxicity to bacteria

tert-Dodecanethiol
NOEC: 8.6 mg/l
Exposure time: 3 h
Growth rate
Respiration inhibition
Method: OECD Test Guideline 209

NOEC: > 10 mg/l
Exposure time: 3 h
Growth rate
Respiration inhibition
Method: OECD Test Guideline 209

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

tert-Dodecanethiol : NOEC: 0.0108 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
semi-static test
Method: OECD Test Guideline 211
No toxicity at the limit of solubility.

**Elimination information (persistence and degradability)**

Bioaccumulation

tert-Dodecanethiol : Species: Danio rerio (zebra fish)
Exposure time: 15 d
Bioconcentration factor (BCF): > 500 - < 1,950
Method: OECD Test Guideline 305
Biomagnification factor <1
The product may be accumulated in organisms.

Biodegradability : This material is not expected to be readily biodegradable.

**Ecotoxicology Assessment**

Acute aquatic toxicity
tert-Dodecanethiol : No toxicity at the limit of solubility.

Chronic aquatic toxicity
tert-Dodecanethiol : May cause long lasting harmful effects to aquatic life.

Toxicity Data on Soil
tert-Dodecanethiol : Adsorbs on soil.

Results of PBT assessment
tert-Dodecanethiol : Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information : May cause long-term adverse effects in the aquatic environment.

**SECTION 13: Disposal considerations**

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

SDS Number: 100000014573 12/15
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)
NA1993, COMBUSTIBLE LIQUID, N.O.S., (TERTIARY DODECANETHIOL), III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN3334, AVIATION REGULATED LIQUID, N.O.S., (TERTIARY DODECANETHIOL), 9, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Other information : tert- Dodecanethiol, S.T. 3, Cat.Y

SECTION 15: Regulatory information

Notification status
- Europe REACH : On the inventory, or in compliance with the inventory
- United States of America (USA) : On the inventory, or in compliance with the inventory
- TSCA
- 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 KECl : 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

Further information
- Legacy SDS Number : CPC00490

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

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

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

| Key or legend to abbreviations and acronyms used in the safety data sheet |
|-----------------------------|------------------|----------------|----------------|
| ACGIH | American Conference of Government Industrial Hygienists | LD50 | Lethal Dose 50% |
| AICS | Australia, Inventory of Chemical Substances | LOAEL | Lowest Observed Adverse Effect Level |
| DSL | Canada, Domestic Substances List | NFPA | National Fire Protection Agency |
| NDSL | Canada, Non-Domestic | NIOSH | National Institute for Occupational Safety and Health |

SDS Number: 100000014573
<table>
<thead>
<tr>
<th>Substances List</th>
<th>Safety &amp; Health</th>
</tr>
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<tbody>
<tr>
<td>CNS</td>
<td>Central Nervous System NTP</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service NZIoC</td>
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<tr>
<td>EC50</td>
<td>Effective Concentration NOAEL</td>
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<td>EC50</td>
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<td>EOSCA Generic Exposure Scenario Tool OSHA</td>
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<td>European Oilfield Specialty Chemicals Association PEL</td>
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<td>European Inventory of Existing Chemical Substances PICCS</td>
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<td>Globally Harmonized System RCRA</td>
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<td>IC50</td>
<td>Inhibition Concentration 50% SARA</td>
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<td>IARC</td>
<td>International Agency for Research on Cancer TLV</td>
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<td>Inventory of Existing Chemical Substances in China TWA</td>
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<td>ENCS</td>
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SDS Number: 100000014573