**SAFETY DATA SHEET**

**Sulfolene**

Version 2.2

Revision Date 2016-07-06

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

**Product information**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Sulfolene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>1094561, 1024666, 1024665, 1024664, 1024663, 1024662, 1024667</td>
</tr>
<tr>
<td>Company</td>
<td>Chevron Phillips Chemical Company LP</td>
</tr>
<tr>
<td></td>
<td>Specialty Chemicals</td>
</tr>
<tr>
<td></td>
<td>10001 Six Pines Drive</td>
</tr>
<tr>
<td></td>
<td>The Woodlands, TX 77380</td>
</tr>
<tr>
<td>Local</td>
<td>Chevron Phillips Chemicals International N.V.</td>
</tr>
<tr>
<td></td>
<td>Airport Plaza (Stockholm Building)</td>
</tr>
<tr>
<td></td>
<td>Leonardo Da Vincielaan 19</td>
</tr>
<tr>
<td></td>
<td>1831 Diegem</td>
</tr>
<tr>
<td></td>
<td>Belgium</td>
</tr>
</tbody>
</table>

**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: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316

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

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

**Responsible Department:** Product Safety and Toxicology Group

**E-mail address:** SDS@CPChem.com

**Website:** www.CPChem.com

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### SECTION 2: Hazards identification

**Classification of the substance or mixture**

REGULATION (EC) No 1272/2008

SDS Number: 100000013472
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Eye irritation, Category 2

H319:
Causes serious eye irritation.

Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms:

Signal Word:
Warning

Hazard Statements:
H319
Causes serious eye irritation.

Precautionary Statements:

Prevention:
P264
Wash skin thoroughly after handling.
P280
Wear eye protection/ face protection.

Response:
P305 + P351 + P338
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313
If eye irritation persists: Get medical advice/ attention.

Hazardous ingredients which must be listed on the label:

- 77-79-2  Sulfolene

SECTION 3: Composition/information on ingredients

Synonyms:
3-Sulfolene
2,5-Dihydrothiophene-1,1-dioxide

Molecular formula:
C4H6SO2

Mixtures

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Index No.</td>
</tr>
<tr>
<td>Sulfolene</td>
<td>77-79-2</td>
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<tr>
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<td>201-059-7</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Eye Irrit. 2; H319</td>
</tr>
<tr>
<td></td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures
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General advice:
Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

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

In case of skin contact:
Wash off with warm water and soap.

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.

SECTION 5: Firefighting measures

Flash point:
113 °C (235 °F) estimated

Autoignition temperature:
No data available

Unsuitable extinguishing media:
High volume water jet.

Special protective equipment for fire-fighters:
Wear self-contained breathing apparatus for firefighting if necessary.

Further information:
Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Fire and explosion protection:
Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Hazardous decomposition products:
Butadiene. Sulfur oxides.

SECTION 6: Accidental release measures

Personal precautions:
Use personal protective equipment. Avoid dust formation. Avoid breathing dust.

Environmental precautions:
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:
Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling:

Advice on safe handling:
Avoid formation of respirable particles. Do not breathe.
Sulfolene

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. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Requirements for storage areas and containers: Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

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 Dusts and Mists / P100. 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. Safety glasses.

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: 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: Crystalline solid
Physical state: Solid
Color: White to off-white
Odor: Pungent

**Safety data**
Flash point: 113 °C (235 °F) estimated
Lower explosion limit: No data available
Upper explosion limit: No data available
Oxidizing properties: no
Autoignition temperature: No data available
Molecular formula: C4H6SO2
Molecular weight: 118,16 g/mol
pH: Not applicable
Freezing point: No data available
Pour point: No data available
Boiling point/boiling range: Not applicable
Vapor pressure: Not applicable
Relative density: 1.31 at 15.6 °C (60.1 °F), estimated
Water solubility: 13% at 20°C (68°F)
Partition coefficient: n-octanol/water: No data available
Viscosity, kinematic: Not applicable
Relative vapor density: Not applicable
Evaporation rate: Not applicable
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: No data available.
Hazardous decomposition products:
Butadiene
Sulfur oxides

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

SECTION 11: Toxicological information

Acute oral toxicity
Sulfolene: LD50: 2.876 mg/kg
Species: Rat
Sex: male and female
Method: OECD Test Guideline 401

Acute inhalation toxicity
Sulfolene: Exposure time: 4 h
Species: Rat
Sex: male and female
Test atmosphere: vapor
Method: OECD Test Guideline 403
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Skin irritation
Sulfolene: No skin irritation

Eye irritation
Sulfolene: Eye irritation

Sensitization
Sulfolene: Did not cause sensitization on laboratory animals.

Repeated dose toxicity
Sulfolene: Species: rat (male)
Application Route: oral gavage
Dose: 0, 25, 75, 150 mg/kg/d
Exposure time: 28 d

SDS Number: 100000013472
Number of exposures: daily
NOEL: 25 mg/kg
Lowest observable effect level: 75 mg/kg
Method: OECD Guideline 422
Target Organs: Kidney, Liver

Species: rat (female)
Application Route: oral gavage
Dose: 0, 10, 25, 75mg/kg/d
Exposure time: 40 - 52 d
Number of exposures: daily
NOEL: 25 mg/kg
Lowest observable effect level: 75 mg/kg
Method: OECD Guideline 422

Species: Mouse, male
Sex: male
Application Route: oral gavage
Dose: 316,562,1000,1780,3160 mg/kg/d
Exposure time: 6 wk
Number of exposures: 5 d/wk
NOEL: 3.160 mg/kg
Lowest observable effect level: 316 - 3.160 mg/kg

Species: Mouse, female
Sex: female
Application Route: oral gavage
Dose: 316,562,1000,1780,3160 mg/kg/d
Exposure time: 6 wk
Number of exposures: 5 d/wk
NOEL: 178 mg/kg
Lowest observable effect level: 316 - 3.160 mg/kg

Carcinogenicity

Sulfolene:
Species: Rat
Sex: female
Dose: 0, 120, 240 mg/kg
Exposure time: 60-78 wks
Number of exposures: 5 d/wk
Remarks: No evidence of carcinogenicity
Species: Rat  
Sex: male  
Dose: 0,197, 372 mg/kg  
Exposure time: 60-78 wks  
Number of exposures: 5 d/wk  
Remarks: No evidence of carcinogenicity

Species: Mouse  
Sex: female  
Dose: 0, 384, 768 mg/kg  
Exposure time: 60-78 wks  
Number of exposures: 5 d/wk  
Remarks: No evidence of carcinogenicity

Species: Mouse  
Sex: male  
Dose: 0, 311, 622 mg/kg  
Exposure time: 60-78 wks  
Number of exposures: 5 d/wk  
Remarks: No evidence of carcinogenicity

Reproductive toxicity

Sulfolene  
Species: Rat  
Sex: male  
Application Route: oral gavage  
Dose: 0, 25, 150 mg/kg/d  
Exposure time: 28 d  
Number of exposures: daily  
Method: OECD Guideline 422  
NOAEL Parent: 75 mg/kg

Species: Rat  
Sex: female  
Application Route: oral gavage  
Dose: 0. 10, 25, 75 mg/kg/d  
Exposure time: 40 - 52 d  
Number of exposures: daily  
Method: OECD Guideline 422  
NOAEL Parent: 75 mg/kg  
NOAEL F1: 25 mg/kg

Aspiration toxicity  
Sulfolene  
No aspiration toxicity classification.

Further information  
Sulfolene  
No data available.

SECTION 12: Ecological information

Toxicity to fish

Sulfolene  
LC50: 940 mg/l  
Exposure time: 96 h  
Species: Salmo gairdneri (Rainbow trout)  
static test Method: OECD Test Guideline 203
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Toxicity to daphnia and other aquatic invertebrates

Sulfolene : EC50: 800 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Immobilization Method: OECD Test Guideline 202

Toxicity to algae

Sulfolene : EC50: > 1.000 mg/l
Exposure time: 4 Days
Species: Selenastrum capricornutum (algae)
Growth inhibition Method: OECD Test Guideline 201

Biodegradability

Sulfolene : aerobic
Result: Not readily biodegradable.
2 %
Testing period: 28 d
Method: OECD Test Guideline 301B

Ecotoxicology Assessment

Additional ecological information : This material is not expected to be harmful to aquatic organisms.

SECTION 13: Disposal considerations

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

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

Product : Do not dispose of waste into sewer. 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.

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.

SDS Number:100000013472

9/12
US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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)
UN3335, AVIATION REGULATED SOLID, N.O.S., (2,5-DIHYDROTHIOPEHENE-1,1-DIOXIDE), 9

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

SECTION 15: Regulatory information

National legislation

<table>
<thead>
<tr>
<th>Major Accident Hazard Legislation</th>
<th>96/82/EC</th>
<th>Update: 2003</th>
</tr>
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<tbody>
<tr>
<td>United States of America TSCA</td>
<td>On the inventory, or in compliance with the inventory</td>
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<tr>
<td>Canada DSL</td>
<td>On the inventory, or in compliance with the inventory</td>
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</tr>
<tr>
<td>Australia AICS</td>
<td>Not in compliance with the inventory</td>
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</tr>
<tr>
<td>New Zealand NZIoC</td>
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<tr>
<td>Japan ENCS</td>
<td>On the inventory, or in compliance with the inventory</td>
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</tr>
<tr>
<td>Korea KECI</td>
<td>On the inventory, or in compliance with the inventory</td>
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</tbody>
</table>

Notification status

Europe REACH : On the inventory, or in compliance with the inventory
United States of America TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : Not in compliance with the inventory
New Zealand NZIoC : Not 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
Sulfolene

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Philippines PICCS: 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: 2
Reactivity Hazard: 0

Further information
Legends to abbreviations and acronyms used in the safety data sheet:
### Table: Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
</tr>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
</tr>
<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
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<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
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<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
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<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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</table>

### Full text of H-statements referred to under sections 2 and 3.

- **H319**  
  Causes serious eye irritation.