SAFETY DATA SHEET

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

Product information

Product Name: Sulfolane W
Material: 1120162, 1099779, 1100043, 1024627, 1024628, 1024629,
1024630, 1024631, 1024632, 1024633

Use: Solvent

Company: Chevron Phillips Chemical Company LP
Specialty Chemicals
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 (+61 2 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
GHS Classification and Labeling: Follow GB 13690, GB 15258 and GB 30000.2 to GB 30000.29 (GHS 2011)

Emergency Overview

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Sulfolane W

Version 3.4

Revision Date 2018-05-11

Danger

Form: Liquid  Physical state: Liquid  Color: clear  Odor: Slight ammonium like

Hazards: May be harmful if swallowed. May damage fertility or the unborn child.

Classification

: Acute toxicity, Category 5, Oral
  Reproductive toxicity, Category 1B

Labeling

Symbol(s): 

Signal Word: Danger

Hazard Statements: H303: May be harmful if swallowed.
H360: May damage fertility or the unborn child.

Precautionary Statements:

Prevention:
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P312: Call a POISON CENTER/doctor if you feel unwell.

Storage:
P405: Store locked up.

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

SECTION 3: Composition/information on ingredients

Synonyms: tetramethylene Sulfone
          Sulfolane W
          Sulfolane w/Water
          Tetrahydrothiophene 1,1-dioxide

Molecular formula: C4H8SO2

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. / EINECS-No.</th>
<th>Concentration [wt%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfolane</td>
<td>126-33-0</td>
<td>96.5</td>
</tr>
</tbody>
</table>

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SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Do not leave the victim unattended.

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

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 : Induce vomiting immediately and call a physician. 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 : 166 °C (331 °F)
Method: Cleveland Open Cup

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 : Normal measures for preventive fire protection.

Hazardous decomposition products : Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

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 : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

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**Advice on safe handling**: Do not breathe vapors/dust. 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**: Normal measures for preventive fire protection.

**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.

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**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>
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</thead>
<tbody>
<tr>
<td>Sulfolane</td>
<td>Manufacturer TWA</td>
<td>0.37 ppm.</td>
<td></td>
<td></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**

**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: 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.

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**SECTION 9: Physical and chemical properties**

**Information on basic physical and chemical properties**

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**Appearance**

Form: Liquid  
Physical state: Liquid  
Color: clear  
Odor: Slight ammonium like

**Safety data**

Flash point: 166 °C (331 °F)  
Method: Cleveland Open Cup  
Lower explosion limit: No data available  
Upper explosion limit: No data available  
Oxidizing properties: no  
Autoignition temperature: No data available  
Molecular formula: C₄H₈SO₂  
Molecular weight: 120.18 g/mol  
pH: Not applicable  
Freezing point: 5.5 - 10 °C (41.9 - 50 °F)  
Pour point: No data available  
Boiling point/boiling range: 100 - 286 °C (212 - 547 °F)  
Vapor pressure: No data available  
Relative density: 1.26  
at 30 °C (86 °F)  
Water solubility: Partly soluble  
Partition coefficient: n-octanol/water: No data available  
Viscosity, kinematic: No data available  
Relative vapor density: 1  
(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: No data available.

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
Sulfolane: LD₅₀: 2,068 mg/kg
          Species: Rat
          Sex: male and female
          Method: OECD Test Guideline 401

Acute inhalation toxicity
Sulfolane: LC₅₀: > 12000 mg/m³
          Exposure time: 4 h
          Species: Rat
          Sex: male and female
          Test atmosphere: vapor
          An LC₅₀/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Acute dermal toxicity
Sulfolane: LD₅₀: >2000 mgKg
          Species: Rat

Skin irritation
Sulfolane: No skin irritation

Eye irritation
Sulfolane: No eye irritation

Sensitization
Sulfolane: Did not cause sensitization on laboratory animals.
**Repeated dose toxicity**

**Sulfolane**
- **Species:** Rat
- **Application Route:** Oral
- **Dose:** 60, 200, 700 mg/kg bw/day
- **Exposure time:** 28 days
- **Number of exposures:** Daily
- **NOEL:** 200 mg/kg bw/day
- **Lowest observable effect level:** 700 mg/kg bw/day

**Species:** Rat
- **Application Route:** Inhalation
- **Dose:** 2.8, 4.0, 20 mg/m³
- **Exposure time:** 90-110 days
- **Number of exposures:** 23 hrs/d, 7d/wk
- **NOEL:** 20 mg/m³

**Reproductive toxicity**

**Sulfolane**
- **Species:** Rat
- **Sex:** female
- **Application Route:** oral gavage
- **Dose:** 60, 200, 700 mg/kg
- **Number of exposures:** Daily
- **Test period:** 2 wk premating to lactation D4
- **Method:** OECD Guideline 421
- **NOAEL Parent:** 200 mg/kg bw/day
- **NOAEL F1:** 60 mg/kg bw/day
- **Decrease birth index and number of pups**

**Developmental Toxicity**

**Sulfolane**
- **Species:** Rat
- **Application Route:** oral gavage
- **Dose:** 60, 200, 700 mg/kg
- **Number of exposures:** Daily
- **Test period:** 2 wk premating to lactation D4
- **NOAEL Teratogenicity:** 60 mg/kg bw/day
- **NOAEL Maternal:** 200 mg/kg bw/day

**Species:** Rat
- **Application Route:** oral gavage
- **Dose:** 100, 200, 500 mg/kg/day
- **Number of exposures:** Daily
- **Test period:** GD 1 - 19
- **NOAEL Teratogenicity:** 200 mg/kg
- **NOAEL Maternal:** 100 mg/kg
- **May damage the unborn child.**

**Sulfolane W**

**Aspiration toxicity**
- **No aspiration toxicity classification.**

**CMR effects**

**Sulfolane**
- **Carcinogenicity:** Not available
- **Mutagenicity:** Did not show mutagenic effects in animal experiments.
- **Teratogenicity:** Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal
Sulfolane W

Experiments
Reproductive toxicity: No toxicity to reproduction

Sulfolane W
Further information: No data available.

SECTION 12: Ecological information

Toxicity to fish
Sulfolane: LC50: > 100 mg/l
Exposure time: 96 h
Species: Oryzias latipes (Orange-red killifish)
static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
Sulfolane: EC50: 852 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202

Toxicity to algae
Sulfolane: EC50: 500 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Method: OECD Test Guideline 201

NOEC: 171 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Method: OECD Test Guideline 201

Bioaccumulation
Sulfolane: Bioconcentration factor (BCF): < 1.3
This material is not expected to bioaccumulate.

Biodegradability
Sulfolane: Result: Not readily biodegradable.
10.1 %
Testing period: 14 d
Method: OECD Test Guideline 301C

Ecotoxicology Assessment
Results of PBT assessment
Sulfolane: Non-classified vPvB substance, Non-classified PBT substance

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

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)
- NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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.
Sulfolane W

SECTION 15: Regulatory information

Notification status
Europe REACH : This mixture contains only ingredients which have been registered according to Regulation (EU) No. 1907/2006 (REACH).
United States of America (USA) TSCA : On TSCA Inventory
Canada DSL : All components of this product are on the Canadian DSL
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 KEIC : 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 : 2073

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>Description</th>
</tr>
</thead>
<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>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
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<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<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>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
</tr>
<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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