

**Sulfolene**

Version 4.3

Revision Date 2023-06-01

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

Product Name : Sulfolene
Material : 1094561, 1024666, 1024665, 1024664, 1024663, 1024662,
1024667

Use : Chemical intermediate

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
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

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

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

Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)

Belgium: 070 245 245 (24 hours/day, 7 days/week)

Bulgaria: +359 2 9154 233

Croatia: +3851 2348 342 (24 hours/day, 7 days/week)

Cyprus: 1401

Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402

Denmark: Danish Poison Center (Gifflinjen): +45 8212 1212

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

Finland: 0800 147 111 09 471 977 (24 hours/day)

France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)

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

Greece: (0030) 2107793777 (24 hours/day, 7 days/week)

Hungary: +36-80-201-199 (24 hours/day, 7 days/week)

Iceland: 543 2222 (24 hours/day, 7 days/week)

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

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

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Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371 67042473. (24 hours.)

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

Lithuania: +370 (85) 2362052

Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)

Malta: +356 2395 2000

The Netherlands: NVIC: +31 (0)88 755 8000

Norway: 22 59 13 00 (24 hours/day, 7 days/week)

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

Portugal: CIAV phone number: +351 800 250 250

Romania: +40213183606

Slovakia: +421 2 5477 4166

Slovenia: Phone number: 112

Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)

Sweden: 112 – ask for Poisons Information

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

: Combustible dust
Eye irritation, Category 2A

Labeling

Symbol(s) :



Signal Word :

: Warning

Hazard Statements :

: May form combustible dust concentrations in air.
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.

Potential Health Effects

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Symptoms of Overexposure : No data available

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.

SECTION 3: Composition/information on ingredients

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

Molecular formula : C4H6SO2

| Component | CAS-No. | Weight % |
|-----------|---------|----------|
| Sulfolene | 77-79-2 | 90 - 100 |

SECTION 4: First aid measures

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 : 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.

Notes to physician

Symptoms : No data available.

Risks : No data available.

Treatment : No data available.

SECTION 5: Firefighting measures

Flash point : 113°C (235°F)
estimated

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| | | |
|--|---|--|
| 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 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. |
| Dust explosion class | : | St2. |

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. |
| Use | : | Chemical intermediate |

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SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****US**

| Components | Basis | Value | Control parameters | Note |
|----------------|------------|-------|--------------------|------|
| Sulfur dioxide | ACGIH | STEL | 0.25 ppm, | A4, |
| | OSHA Z-1 | TWA | 5 ppm, 13 mg/m3 | |
| | OSHA Z-1-A | TWA | 2 ppm, 5 mg/m3 | |
| | OSHA Z-1-A | STEL | 5 ppm, 13 mg/m3 | |

A4 Not classifiable as a human carcinogen

Immediately Dangerous to Life or Health Concentrations (IDLH)

| Substance name | CAS-No. | Control parameters | Update |
|----------------|-----------|---|------------|
| Sulfur dioxide | 7446-09-5 | Immediately Dangerous to Life or Health Concentration Value 100 parts per million | 1995-03-01 |

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 : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as: Air-Purifying Respirator for Dusts and Mists / P100. A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, 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.

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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 20C (68F)

Partition coefficient: n-
octanol/water : No data available

Viscosity, kinematic : Not applicable

Relative vapor density : Not applicable

Evaporation rate : Not applicable

Conductivity : No data available

Dust deflagration index Kst : 215 m.b./s

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Minimum ignition energy : 5 - 10 mJ

Particle size < 500 µm

SECTION 10: Stability and reactivity

Reactivity : Stable under recommended storage conditions.

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

Possibility of hazardous reactions

Hazardous reactions : Hazardous reactions: Hazardous polymerization does not occur.

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

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

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Species: rat (female)
Application Route: oral gavage
Dose: 0, 10, 25, 75 mg/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

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

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 56, 100, 178, 316, 562 mg/kg
Exposure time: 6wk
Number of exposures: 5 d/wk
NOEL: 316 mg/kg

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 56, 100, 178, 316, 562 mg/kg
Exposure time: 6wk
Number of exposures: 5 d/wk
NOEL: 100 mg/kg

Genotoxicity in vitro

Sulfolene : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

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Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Sister Chromatid Exchange Assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

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

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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

Sulfolene
Aspiration toxicity : No aspiration toxicity classification.

Sulfolene
Further information : 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

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

Bioaccumulation

Sulfolene : This material is not expected to bioaccumulate.

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Mobility

Sulfolene : No data available

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

Ecotoxicology Assessment**Short-term (acute) aquatic hazard**

Sulfolene : This material is not expected to be harmful to aquatic organisms.

Long-term (chronic) aquatic hazard

Sulfolene : 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.

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.

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IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN3335, AVIATION REGULATED SOLID, N.O.S., (2,5-DIHYDROTHIOPEHENE-1,1-DIOXIDE),
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.

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information

National legislation

- SARA 311/312 Hazards** : Combustible dust
Serious eye damage or eye irritation
- CERCLA Reportable Quantity : 50000 lbs
1,3-Butadiene
- SARA 302 Reportable Quantity : Calculated RQ exceeds reasonably attainable upper limit.
Sulfur dioxide
- SARA 302 Threshold Planning Quantity : This material does not contain any components with a section 302 EHS TPQ.
- SARA 304 Reportable Quantity : Calculated RQ exceeds reasonably attainable upper limit.
Sulfur dioxide 7446-09-5 500 lbs

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SARA 313 Components : 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).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations**Pennsylvania Right To Know**

: Sulfolene - 77-79-2
Sulfur dioxide - 7446-09-5
1,3-Butadiene - 106-99-0

California Prop. 65 Components

: WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov/food.

1,3-Butadiene

106-99-0

WARNING: This product can expose you to chemicals including [listed below], which is [are] known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Sulfur dioxide
1,3-Butadiene7446-09-5
106-99-0

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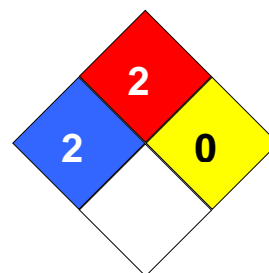
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Notification status

| | | |
|-------------------------------------|---|--|
| Europe REACH | : | Not in compliance with the inventory |
| Switzerland CH INV | : | Not in compliance with the inventory |
| United States of America (USA) TSCA | : | On or in compliance with the active portion of the TSCA inventory |
| Canada DSL | : | All components of this product are on the Canadian DSL |
| Australia AIIC | : | 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 | : | A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s). |
| Philippines PICCS | : | On the inventory, or in compliance with the inventory |
| Taiwan TCSI | : | 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**

Legacy SDS Number : 25500

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% |
| AIIC | Australian Inventory of Industrial Chemicals | 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 |

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| | Substances List | | Safety & Health |
|--------|--|-------|--|
| CNS | Central Nervous System | NTP | National Toxicology Program |
| CAS | Chemical Abstract Service | NZIoC | New Zealand Inventory of Chemicals |
| EC50 | Effective Concentration | NOAEL | No Observable Adverse Effect Level |
| EC50 | Effective Concentration 50% | NOEC | No Observed Effect Concentration |
| EGEST | EOSCA Generic Exposure Scenario Tool | OSHA | Occupational Safety & Health Administration |
| EOSCA | European Oilfield Specialty Chemicals Association | PEL | Permissible Exposure Limit |
| EINECS | European Inventory of Existing Chemical Substances | PICCS | Philippines Inventory of Commercial Chemical Substances |
| MAK | Germany Maximum Concentration Values | PRNT | Presumed Not Toxic |
| GHS | Globally Harmonized System | RCRA | Resource Conservation Recovery Act |
| >= | Greater Than or Equal To | STEL | Short-term Exposure Limit |
| IC50 | Inhibition Concentration 50% | SARA | Superfund Amendments and Reauthorization Act. |
| IARC | International Agency for Research on Cancer | TLV | Threshold Limit Value |
| IECSC | Inventory of Existing Chemical Substances in China | TWA | Time Weighted Average |
| ENCS | Japan, Inventory of Existing and New Chemical Substances | TSCA | Toxic Substance Control Act |
| KECI | Korea, Existing Chemical Inventory | UVCB | Unknown or Variable Composition, Complex Reaction Products, and Biological Materials |
| <= | Less Than or Equal To | WHMIS | Workplace Hazardous Materials Information System |
| LC50 | Lethal Concentration 50% | ATE | Acute toxicity estimate |