Di-(2-Hydroxyethyl) Disulfide

Version 1.6 Revision Date 2022-08-12

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	:	Di-(2-Hydroxyethyl) Disulfide
Material	:	1121425, 1116603, 1107391, 1088334, 1077080, 1070368, 1079211, 1086445, 1086807, 1077079, 1097790, 1027449, 1024827

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
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The Woodlands, TX 77380

Local : Chevron Phillips Chemicals (Shanghai) Corporation
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Tel: (86-21) 22157200

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 (Giftlinjen): +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)
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
GHS Classification and Labeling: Follow GB 13690, GB 15258 and GB 30000.2 to GB 30000.29 (GHS 2011)

Emergency Overview

Danger

Form: liquid **Physical state**: liquid **Color**: Colorless to light yellow **Odor**: Pungent

Hazards	:	Toxic if swallowed. Toxic in contact with skin. Causes serious eye irritation. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure if swallowed. Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Classification

: Acute toxicity, Category 3, Oral
Acute toxicity, Category 3, Dermal
Serious eye damage/eye irritation, Category 2A
Skin sensitization, Category 1
Specific target organ toxicity - repeated exposure, Category 2, Oral, Kidney, Liver
Short-term (acute) aquatic hazard, Category 2
Long-term (chronic) aquatic hazard, Category 2

Labeling

Symbol(s) :

Signal Word : Danger

Hazard Statements : H301 + H311: Toxic if swallowed or in contact with skin.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H373: May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P260: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P310 + P330: IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312: IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314: Get medical advice/ attention if you feel unwell.
P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313: If eye irritation persists: Get medical advice/ attention.
P361+P364: Take off immediately all contaminated clothing and wash it before reuse.
P391: Collect spillage.
Disposal:
P501: Dispose of contents/ container to an approved waste disposal plant.

SECTION 3: Composition/information on ingredients

Synonyms : Dithiodiglycol
DiHEDS

Molecular formula : C4H10O2S2

Chemical name	CAS-No. / EINECS-No.	Concentration [wt%]
Dithiodiglycol	1892-29-1	88

SECTION 4: First aid measures

General advice	:	Move out of dangerous area. Consult a physician. 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	:	If on skin, rinse well with water.
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. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION 5: Firefighting measures

Flash point	:	Not applicable
Autoignition temperature	:	285°C (545°F) Method: EU Method A.15
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Fire and explosion protection	:	Normal measures for preventive fire protection.
Hazardous decomposition products	:	Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment.
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	:	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

Advice on safe handling : 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. 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 : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : 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

Not applicable

Engineering measures

Adequate ventilation to control airborned 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:. Use a positive pressure, air-supplying respirator 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.
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:. Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.
Hygiene measures	:	Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	liquid
Physical state	:	liquid
Color	:	Colorless to light yellow
Odor	:	Pungent

Safety data

Flash point	:	Not applicable
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	No
Autoignition temperature	:	285°C (545°F) Method: EU Method A.15
Molecular formula	:	C4H10O2S2
Molecular weight	:	154.26 g/mol
pH	:	Not applicable
Freezing point	:	5°C (41°F)
Boiling point/boiling range	:	Not applicable
Vapor pressure	:	0.00 Pa

		at 37.8°C (100.0°F) Method: OECD Test Guideline 104 estimated
Relative density	:	1.25 at 15.6 °C (60.1 °F)
Density	:	1.29 G/ML
Water solubility	:	> 1,000 g/l at 20°C (68°F) Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	:	log Pow: -0.3 at 20°C (68°F) Method: OECD Test Guideline 107
Viscosity, kinematic	:	50 cSt at 40°C (104°F)
Relative vapor density	:	2.69 (Air = 1.0)
Evaporation rate	:	No data available
Percent volatile	:	> 99 %

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.

Materials to avoid : Avoid oxidizing agents.

Hazardous decomposition products : Carbon oxides
Sulfur oxides

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

SECTION 11: Toxicological information

Acute oral toxicity

Dithiodiglycol : LD50: 376 mg/kg
Species: Rat
Sex: male
Method: OECD Test Guideline 401

LD50: 173 mg/kg
Species: Rat
Sex: female
Method: OECD Test Guideline 401

Acute dermal toxicity

Dithiodiglycol : LD50: 516 mg/kg
Species: Rabbit
Sex: male and female
Method: OECD Test Guideline 402

Skin irritation

Dithiodiglycol : No skin irritation

Eye irritation

Dithiodiglycol : Eye irritation

Sensitization

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

Repeated dose toxicity

Dithiodiglycol : Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg
Exposure time: 30 d
Number of exposures: Daily
NOEL: 20 mg/kg
Lowest observable effect level: 75 mg/kg
Method: OECD Guideline 422
Target Organs: Kidney, Liver

Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg
Exposure time: 42 d
Number of exposures: Daily
NOEL: 20 mg/kg
Method: OECD Guideline 422

Genotoxicity in vitro

Dithiodiglycol : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471

Result: negative

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

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: Ambiguous

Genotoxicity in vivo

Dithiodiglycol : Test Type: Mouse micronucleus assay
Species: Mouse
Route of Application: Oral
Exposure time: 24 - 48 h
Method: OECD Test Guideline 474
Result: negative

Reproductive toxicity

Dithiodiglycol : Species: Rat
Sex: male
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg bw
Exposure time: 30 d
Number of exposures: Daily
Method: OECD Guideline 422
NOAEL Parent: 20 mg/kg
NOAEL F1: 20 mg/kg
Fertility and developmental toxicity tests did not reveal any effect on reproduction.

Species: Rat
Sex: female
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg bw
Exposure time: 42 d
Number of exposures: Daily
Method: OECD Guideline 422
NOAEL Parent: 20 mg/kg
NOAEL F1: 20 mg/kg
Fertility and developmental toxicity tests did not reveal any effect on reproduction.

Di-(2-Hydroxyethyl) Disulfide
Aspiration toxicity : No aspiration toxicity classification.

Di-(2-Hydroxyethyl) Disulfide
Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

Dithiodiglycol	:	LC50: > 100 mg/l Exposure time: 96 h Species: Cyprinus carpio (Carp) static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Dithiodiglycol	:	EC50: 4.4 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202

Toxicity to algae

Dithiodiglycol	:	ErC50: > 100 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (algae) Growth inhibition Method: OECD Test Guideline 201 EyC50: 45 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (algae) Growth inhibition Method: OECD Test Guideline 201

Toxicity to bacteria

Dithiodiglycol	:	EC50: 612 mg/l Exposure time: 3 h Growth rate Species: Bacteria Respiration inhibition Method: OECD Test Guideline 209

Biodegradability

Dithiodiglycol	:	aerobic Result: Not readily biodegradable. 20 % Testing period: 28 d Method: OECD Test Guideline 310

Bioaccumulation

Dithiodiglycol	:	No bioaccumulation is to be expected (log Pow <= 4).

Mobility

Dithiodiglycol	:	No data available
Additional ecological information	:	Toxic to aquatic life with long lasting effects.

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
Dithiodiglycol : Toxic to aquatic life.

Long-term (chronic) aquatic hazard
Dithiodiglycol : Toxic to aquatic life with long lasting effects.

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 : 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.

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)
UN2810, TOXIC, LIQUIDS, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III, MARINE POLLUTANT, (DITHIODIGLYCOL)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III, (E), ENVIRONMENTALLY HAZARDOUS, (DITHIODIGLYCOL)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF

DANGEROUS GOODS (EUROPE))
60,UN2810,TOXIC LIQUID, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III, ENVIRONMENTALLY HAZARDOUS, (DITHIODIGLYCOL)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III, ENVIRONMENTALLY HAZARDOUS, (DITHIODIGLYCOL)

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information

Classification and Labeling of Commonly Used Dangerous Chemical Substances : Primary label: Toxic Material.

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Canada NDSL	:	This product contains one or several components that are not on the Canadian DSL nor NDSL.
Other AIIC	:	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).
Taiwan TCSI	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

Further information

Legacy SDS Number : 96130

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 Substances List	NIOSH	National Institute for Occupational 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%		