Di-(2-Hydroxyethyl) Disulfide

Version 1.4 Revision Date 2012-07-12

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

Product information

Trade name	:	Di-(2-Hydroxyethyl) Disulfide
Material	:	1107391, 1088334, 1077080, 1070368, 1079211, 1086445, 1086807, 1077079, 1097790, 1027449, 1024827
Use	:	Chemical intermediate
Company	:	Specialty Chemicals 10001 Six Pines Drive The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848 9013
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	:	MSDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

Emergency Overview

Danger

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

OSHA Hazards : Combustible Liquid, Moderate skin irritant, Severe eye irritant, Toxic by ingestion, Toxic by skin absorption

GHS Classification

: Flammable liquids, Category 4
Acute toxicity, Category 4, Oral
Acute toxicity, Category 4, Inhalation
Acute toxicity, Category 3, Dermal
Skin irritation, Category 2
Serious eye damage, Category 1
Specific target organ systemic toxicity - single exposure, Category 3

GHS-Labeling

Symbol(s) :

Signal Word : Danger

Hazard Statements : H227: Combustible liquid
H302 + H332: Harmful if swallowed or if inhaled.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H318: Causes serious eye damage.
H336: May cause drowsiness or dizziness.

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.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/ physician.
P322: Specific measures (see supplemental first aid instructions on this label).
P330: Rinse mouth.
P332 + P313: If skin irritation occurs: Get medical advice/ attention.
P361: Remove/Take off immediately all contaminated clothing.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
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.

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.

ACGIH No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3: Composition/information on ingredients

Synonyms : Dithiodiglycol
DiHEDS

Molecular formula : C4H10O2S2

Component	CAS-No.	Weight %
Dithiodiglycol	1892-29-1	60 - 100

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. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

If inhaled : Call a physician or poison control center immediately. Move to fresh air. If unconscious place in recovery position and seek medical advice.

In case of skin contact : Take victim immediately to hospital. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. 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. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : 93 °C (199 °F)
Method: PMCC

Autoignition temperature	:	No data available
Suitable extinguishing media	:	Carbon dioxide (CO2).
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 fire fighting 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	:	Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas.
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	:	Avoid formation of aerosol. 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. Provide sufficient air exchange and/or exhaust in work rooms. To avoid spills during handling keep bottle on a metal tray. 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	:	Prevent unauthorized access. 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

Engineering measures

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. 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 work place. Wear as appropriate:. Protective suit. Safety shoes.
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	:	93 °C (199 °F) Method: PMCC
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	no
Autoignition temperature	:	No data available
Molecular formula	:	C4H10O2S2
Molecular Weight	:	154.26 g/mol
pH	:	Not applicable
Freezing point	:	5 °C (41 °F)
Boiling point/boiling range	:	158 - 163 °C (316 - 325 °F) at 3.50 MMHG
Vapor pressure	:	0.10 PSI at 37.8 °C (100.0 °F) estimated
Relative density	:	1.25, 15.6 °C(60.1 °F)
Density	:	1.29 G/ML
Water solubility	:	Miscible
Partition coefficient: n-octanol/water	:	No data available
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

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. 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	:	Avoid oxidizing agents.
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Di-(2-Hydroxyethyl) Disulfide
Acute oral toxicity : Acute toxicity estimate: 397.73 mg/kg
Method: Calculation method

Di-(2-Hydroxyethyl) Disulfide
Acute inhalation toxicity : Acute toxicity estimate: 12.5 mg/l
Test atmosphere: vapor
Method: Calculation method

Di-(2-Hydroxyethyl) Disulfide
Acute dermal toxicity : Acute toxicity estimate: 586.36 mg/kg
Method: Calculation method

Di-(2-Hydroxyethyl) Disulfide
Skin irritation : Extremely corrosive and destructive to tissue.

Di-(2-Hydroxyethyl) Disulfide
Eye irritation : Risk of serious damage to eyes.

May cause irreversible eye damage.

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

Di-(2-Hydroxyethyl) Disulfide
Further information : Concentrations substantially above the TLV value may cause narcotic effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Solvents may degrease the skin.
Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information

Elimination information (persistence and degradability)

Biodegradability	:	Not applicable
Additional ecological information	:	No data available

SECTION 13: Disposal considerations

The information in this MSDS 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 MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN2810, TOXIC, LIQUIDS, ORGANIC, N.O.S., (ORGANIC SULFUR COMPOUND), 6.1, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (ORGANIC SULFUR COMPOUND), 6.1, III, (93 °C)

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

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

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN2810, TOXIC LIQUID, ORGANIC, N.O.S., (ORGANIC SULFUR COMPOUND), 6.1, III

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards	:	Fire Hazard Acute Health Hazard
CERCLA Reportable Quantity	:	This material does not contain any components with a CERCLA RQ.
SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 302 Threshold Planning Quantity	:	SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 304 Reportable Quantity	:	This material does not contain any components with a section 304 EHS RQ.
SARA 313 Ingredients	:	SARA 313: 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 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 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 12 (40 CFR 61).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (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 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know

:	Dithiodiglycol	1892-29-1
:	Water	7732-18-5
:	Related Materials	

Pennsylvania Right To Know

:	Dithiodiglycol	1892-29-1
:	Water	7732-18-5
:	Related Materials	

New Jersey Right To Know

:	Related Materials	
:	Water	7732-18-5
:	Dithiodiglycol	1892-29-1

New Jersey Right To Know

:	Dithiodiglycol	1892-29-1
:	Water	7732-18-5
:	Related Materials	

California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

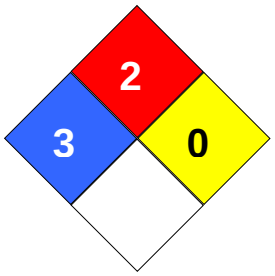
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
United States of America US.TSCA	:	On the inventory, or in compliance with the inventory
Canada NDSL	:	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 KECI	:	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

NFPA Classification : Health Hazard: 3
Fire Hazard: 2
Reactivity Hazard: 0



Further information

Legacy MSDS Number : 96130

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

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

The information provided in this Material 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%		