

SAFETY DATA SHEET

NAME OF PRODUCT 2-mercaptoethanol

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Catalog Number(s):

22-149

Product name: 2-mercaptoethanol

Synonyms: Thioethylene glycol, 2-hydroxyethylmercaptan, BME, β -mercaptoethanol, Thioglycol

Manufacturer: Molecular Toxicology Inc.

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Emergency contact (Chemtrec): Contact 1800-424-9300 (USA) or 703 527 3887 (International) at other times
Email: chemtrec@chemtrec.com; <http://www.chemtrec.com/>

Recommended use: Laboratory, For Research Only

Restrictions on use: Not for clinical use

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture per GHS and EU Directive 1272/2008



Danger

Physical hazards

Flammable liquids (Category 4)

Health hazards

Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 2)
Skin irritation (Category 2)
Serious eye damage (Category 1)
Skin sensitization (Category 1)
Specific organ toxicity-repeated exposure, Oral (Category 2)
Target organs: Liver, heart
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)

Environmental hazards

See eco-toxicity section 12.

Labelling

Hazard Statements

H227 Combustible liquid
H301+331 Toxic if swallowed or if inhaled
H310 Fatal in contact with skin
H315 Causes skin irritation
H317 May cause an allergic reaction

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H318 Causes serious eye damage
H373 May cause damage to organs (Liver, heart) through prolonged or repeated exposure if swallowed
H410 Very toxic to aquatic life with long-lasting effects

Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
P260 Do not breathe dust/fumes/gas/mist/vapors/spray
P262 Do not get in eyes, on skin, or on clothing
P264 Wash skin thoroughly after handling
P270 Do not eat, drink, or smoke while using this product
P271 Use only outdoors or in a well-ventilated area
P272 Contaminated clothing should not be allowed out of the workplace
P273 Avoid release into the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection
P301+310+330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P302+350+310 IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/physician.
P304+340+311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician
P305+351+338+310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P314 Get medical advice/attention if you feel unwell
P333+313 If skin irritation or rash occurs: Get medical attention/advice
P362 Take off contaminated clothing and wash before reuse
P370+378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
P391 Collect spillage
P403+233+235 Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405 Store locked up
P501 Dispose of contents/container to an approved waste disposal plant

Other hazards Stench. Rapidly absorbed through skin

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Component	Purpose	CAS-No	EC-No.	Weight %
2-mercaptoethanol C ₂ H ₆ OS	Reduce disulfide bonds, antioxidant	60-24-2	200-464-6	100%

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SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.
Skin Contact	Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
Inhalation	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Protection of first-aiders	Not required

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in Section 2 and Section 11.

Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture

Carbon oxides, Sulphur oxides

Advice for firefighters

Fire-fighters should wear fully protective impervious protective equipment and self-contained breathing apparatus (SCBA).

Further information

Use water spray to cool unopened containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapors, mist, or gas. Remove all sources of ignition. Ensure adequate ventilation. Evacuate personnel to safe area. Use personal protective equipment. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

For personal protection see Section 8.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not release material into drains. Discharge into the environment must be avoided.

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Methods and material for containment and cleaning up

Contain spillage then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see Section 13). Keep in suitable, closed containers for disposal.

Reference to other sections

Refer to Sections 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.

Keep away from sources of ignition – No smoking. Take measures to prevent build-up of electrostatic charge.

For precautions see Section 2.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Container which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2-8°C

Storage class (TRGS 510): Non-combustible, acute toxic Cat. 1 and 2/ very toxic hazardous materials.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace control parameters

60-24-2 2-mercaptoethanol TWA 0.20000 ppm Workplace Environmental Exposure Levels

Remarks: Skin

Monitoring methods

N/A

Exposure controls

Appropriate Engineering Controls

Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye Protection: Tight fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand Protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Skin and body protection

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Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection

Exposure risk assessment must be performed by a qualified Industrial Hygienist. Where risk assessment shows air purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. NIOSH approved Respiratory Protection is required by EPA. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures - Handle in accordance with good industrial hygiene and safety practice. Wash hands, forearms and face thoroughly after handling chemical products, before smoking, eating and using lavatory, and at the end of the work period. Employ techniques to avoid contamination of clothing. Keep away from food, beverages, and feed.

Environmental exposure controls – Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Exposure limits

Permissible Exposure Limits and Threshold Limit Values not specified by OSHA.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Light Yellow Liquid
Auto-ignition temperature	295°C
Boiling point	157-158°C
Decomposition temperature	>157°C
Flammable limits in air	1.1%-2.7%
Flash point	73°C
Formula	C ₂ H ₆ OS
Melting point	-100°C
Molecular weight	78.13 g/mol
Odor	Stench
Osmolality	no data available
Partition Coefficient	Log Pow: -0.056
pH	no data available
Relative Density	1.110
Solubility in water	Soluble
Specific gravity	no data available
Vapor density	2.69
Vapor pressure	1 mmHg
Viscosity	3.43 cP

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive.

Chemical stability

Stable under normal conditions. Decomposition will not occur if used and stored appropriately. Heat sensitive. Water reactive.

Possibility of hazardous reactions

No hazardous reactions known.

Conditions to avoid

Heat, flames, and sparks. Exposure to moist air or water.

Incompatible materials

Metals, oxidizing agents, strong acids, heavy metal salts.

Hazardous decomposition products

No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects**Acute toxicity**

LD ₅₀	oral, rat	244 mg/kg
LD ₅₀	dermal, rabbit	112-224 mg/kg
LC ₅₀	inhalation, rat	2mg/L 4 hours
LC ₅₀	inhalation, rat	625 ppm

Skin corrosion/irritation

Irritating to skin (Rabbit, Draize test))

Serious eye damage/eye irritation

Risk of serious damage to eyes (Rabbit)

Respiratory or skin sensitization

May cause sensitization by skin contact (Guinea pig, maximization test (GPMT))

Germ cell mutagenicity

Experiments have shown mutagenic effects in cultural bacterial cells.

Carcinogenicity

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

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

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

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

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Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

May cause damage to liver and heart through prolonged exposure.

Aspiration hazard

no data available

Potential health effects

Burning sensation, cough, wheezing, laryngitis, shortness of breath, vomiting, headache, nausea, weakness, unconsciousness. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Spasms, inflammation and edema of the larynx and bronchi, pneumonitis, pulmonary edema.

Synergistic effects

no data available

Additional toxicological information:

RTECS: KL5600000

SECTION 12. ECOLOGICAL INFORMATION

Toxicity**Aquatic ecotoxicity:**

Very toxic to aquatic organisms, may cause long-term adverse effects in the environment.

Component	Organism	Value
2-mercaptoethanol	Freshwater algae	12 mg/L EC ₅₀ = 72 hours
	Freshwater fish	46-100 mg/L LC ₅₀ = 96 hours
	Microtox	125 mg/L EC ₅₀ = 17 hours
	Water flea	1.52 mg/L EC ₅₀ = 48 hours

Persistence and degradability:

Soluble in water. Persistence is unlikely. Not readily biodegradable.

Biochemical Oxygen Demand (BOD): 105 mg/g

Chemical Oxygen Demand (COD): 1.894 mg/g

Behavior in environment systems: No data available.

Bioaccumulative potential: Does not accumulate in organisms.

Mobility in soil: Will likely be mobile.

Additional ecological information: No data available

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course, or sewage system.

Results of PBT and vPvB Assessment

PBT: Not applicable

vPvB: Not applicable

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Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. This combustible material can be burned in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US) regulations:

UN: 2966 Class: 6.1 Packing Group: II
Proper shipping name: Thioglycol
Reportable Quantity (RQ): Not available
Poison Inhalation Hazard: No

IMDG

UN: 2966 Class: 6.1 Packing Group: II EMS-No. F-A, S-A
Proper shipping name: Thioglycol
Marine pollutant: Yes

IATA

UN: 2966 Class: 6.1 Packing Group: II
Proper shipping name: Thioglycol

Further information

Transport in accordance with local, state, and federal regulations. When sold in quantities of less than 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

SECTION 15. REGULATORY INFORMATION

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

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.

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

60-24-2 2-mercaptoethanol

Pennsylvania Right To Know Components

60-24-2 2-mercaptoethanol

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New Jersey Right To Know Components

60-24-2 2-mercaptoethanol

California Prop. 65 Components

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

SECTION 16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Molecular Toxicology, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See www.moltox.com and/or the invoice or packing slip for additional terms and conditions of sale.