


Safety Data Sheet

I. Chemicals & Exhibitor Info

Product Information: Ethylene Glycol
Other Information: -
Suggested Use and Prohibitions: Raw materials for polyester, anti-freeze, desiccants, engineering plastics, PET bottles and brake fluids.
Manufacturer , Importer or Supplier Name, Addresses, Phone: China Man-Made Fiber Corporation Kaohsiung Plant No.8, Jingjian Road, Dashe Dist, Kaohsiung City, Taiwan Tel : (886)-7-3512161~ 9
Emergency Phone: (886)-7-3512161~ 9 Fax: (886)-7-3513035

II. Hazard Identification

Chemical Hazard Classification: Class 5 acute toxic substance (swallowed), class 2B serious eye injury/irritation substance, class 2 specific target organ systematic toxicity - repeated exposure.
Labeled Contents: <p>Symbols: </p> <p>Warning sign: Warning</p> <p>Hazard Warning Information: May be harmful if swallowed. Causes serious eye irritation. Causes damage to organs through prolonged or repeated exposure.</p> <p>Hazard Prevention Measures: If comes in contact with eyes, wash immediately with large amount of water and then seek medical care. Once clothes are contaminated, remove immediately. Avoid exposure to this substance – must follow special instructions for use.</p>
Other Hazards: -

III. Composition / Information on Ingredients (Single)

English Name: Ethylene Glycol
Synonyms: Glycol, Ethylene Alcohol, 1,2-dihydroxyethane, 1,2-ethanediol, Ethylene dihydrate, Glycol Alcohol.
Chemical Abstracts Number (CAS NO.): 107-21-1
Hazard Ingredient (%): 100

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IV. First Aid Measures

Emergency and First Aid Procedures:

Inhalation:

1. Remove the pollution sources or move patient to a place with plenty of fresh air.
2. Seek medical attention immediately.

Skin Contact:

1. Remove contaminated clothes, shoes and leather items (such as watch straps, belts).
2. Use gentle running water to wash the afflicted part for over 10 minutes.
3. If irritation persists, wash repeatedly.
4. Seek medical attention immediately.
5. Make sure to remove the dirt completely from the contaminated clothes, shoes and leather items before re-use or disposal.

Eye Contact:

1. Immediately lift the eyelids, use warm running water to wash contaminated eye(s) for 10 minutes.
2. If there is irritation after washing, wash repeatedly.
3. Seek medical attention immediately.

Swallowed:

1. If the patient is about to lose consciousness, is unconscious or in convulsion, do not feed anything through the mouth.)
2. Do not induce vomiting. Let the patient drink 240~300 ml of water.
3. If the patient is vomiting spontaneously, give water repeatedly and rinse mouth.
4. If breathing has stopped, perform CPR by a trained personnel; if the heart has stopped beating, apply CPR.
5. Quickly send the patient to emergency room.

Major Disease and Harm Effects:

1. Ethylene glycol can be absorbed through skin eczema.
2. A dosage of 100 ml can cause death.

First-Aid Personal Protection:

Must wear Class C protective equipment for performing first-aid in safe area.

Prompt to Doctor: For ingestion, consider gastric lavage.

V. Fire Fighting Measure

Suitable Extinguishing Media:

Dry Chemical, alcohol-resistant foam, carbon dioxide, polymer foam, water mist.

Special Exposure Hazards: Using water mist or foam to extinguish fire may induce frothing.

Special Extinguishing Procedure:

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1. Spraying water mist on the liquid surface will cool and induce frothing, thereby extinguishing the fire.
2. If the spillage ignites, use water mist to disperse the vapor.

Special Protection Equipment:

VI. Accidental Release Measures

Personal Protection:

1. Restrict personnel from entering the leaking area until completely cleaned.
2. Make sure that only trained personnel are allowed to clean up.
3. Wear appropriate personal protection equipment.

Environmental Protection:

1. Ventilate and change the air in the leakage area.
2. Remove all ignition sources.
3. Notify the relevant government safety, hygiene and environmental protection agencies.

Methods for Cleaning Up:

1. Do not touch the leaking substance.
2. Prevent the spilled substances from entering the drainage, canals or closed spaces.
3. If safety permits, try to stop or reduce the spillage.
4. Surround the leakage with sand, soil or other adsorbing substances that will not react with the leaking substance.
5. For small amount of leakage: absorb using absorbents that will not react with the leaking substance. Contaminated absorbents are as hazardous as the leakage and must be kept in covered and labeled containers. Wash the leakage area with water. Small amount of leakage can be diluted with large amount of water.
6. Large amount of leakage: Contact the fire department, emergency rescue agency and supplier for assistance.

VII. Handling and Storage

Handling:

1. The storage area must be installed with the proper protective equipment. The work personnel must be properly trained and notified of the danger and safe usage of this substance.
2. If this substance is released in the storage site, immediately wear the respirator and perform the proper disposal.
3. Before operation, check if the container is leaking. Consider using a closed system to operate this substance.
4. Avoid producing steam and dewdrops. Also prevent the steam and dewdrops from entering the air in the work area.

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5. The specific gravity of steam is greater than air, will accumulate in low-lying, enclosed areas, storage areas or poor ventilation areas.
6. The personnel should be positioned at upwind position for all opening, reversal and mixing operations.
7. Do not store contaminated liquid back into the original storage container.

Storage:

1. Stay far away from heat sources and incompatible substances during storage and operation in order to avoid producing toxic heat decompositions or violent reactions.
2. Empty vessels, containers and pipes may still contain hazardous residues. Clean properly before soldering, cutting, drilling or heating.
3. Apply minimum amount for operation in specified area with excellent ventilation and separate from the storage area.
4. Do not use with incompatible substances (such as strong oxidizer and strong base) as it will cause violent reactions.

VIII. Exposure Control / Personal Protection

Engineering Control:

1. Overall gas exchange installation.
2. Local exhaust ventilation system may be required during heating and formation of dewdrops.
3. Provide sufficient fresh air supply to supplement the air discharged by the exhaust ventilation system.

Control Factor

TWA	STEL	CEILING	BEIS
—	—	50ppm	—

Personal Protection Equipment:

Respiratory Protection: No special requirements.

Hand Protection:

Leak-proof gloves made of natural rubber, neoprene rubber, polyvinyl chloride, butyl rubber, Viton, Teflon, Saranex, Barricade, 4H, Terllchem HPS, polyvinyl and nitrile rubber.

Eye Protection: Chemical safety goggles and masks.

Skin & Body Protection:

Above-mentioned whole-body protective outfit, work pants, apron and work boots made of rubber.

Hygiene Procedures:

1. After work, remove the contaminated clothes as quickly as possible. Throw away or wash

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clothes thoroughly before wearing again. Notify the laundry personnel of the danger of the contaminated clothes.

2. Smoking and eating are strictly prohibited in work areas.
3. Wash hands thoroughly after handling this substance.
4. Keep the work area clean.

IX. Physical and Chemical Properties / Characteristics

Appearance: Clear, colorless moisture-absorbing liquid	Odor: Sweet odor
Odor threshold: 0.08 ppm	Melting point: -13 °C
pH value: 7 (Neutral)	Boiling Point / Boiling Range: 198 °C
Flammability: -	Flash Point: 111 °C
Decomposition Temperature: -	Test Method: Close Cup
Spontaneous Temperature: 398 °C	Exposure Limits: 3.2 % ~ 15.3 %
Vapor Pressure: 0.05 mmHg	Vapor Density: 2.14 (air = 1)
Specific Gravity: 1.1135 (water = 1)	Solubility: Completely soluble in water
Log kow: -1.93 ~ -1.36	Percent volatile: -

X. Stability and Reactivity

Stability: Stable under normal conditions.
<p>Special Conditions of Hazardous Reaction:</p> <ol style="list-style-type: none"> 1. Avoid temperature over 111 °C. 2. Strong oxidizers (such as perchloric acid, nitrate, butyric acid): Increases the danger of fire and explosion. 3. Tetraphosphorus trisulfide: High temperature will cause explosion. 4. Strong base (such as sodium hydroxide): produces decomposition. 5. Perchloric acid: produces violent reaction. 6. Strong acid (such as fuming sulfuric acid, 96% sulfuric acid, chlorosulfonic acid): The pressure will increase in tightly shut container. 7. DC silver – copper wires: will burn on contact. 8. Aluminum: will be corroded by ethylene glycol at 100 °C.
<p>Conditions to Avoid:</p> <ol style="list-style-type: none"> 1. Avoid temperature over 111 °C. 2. DC silver – copper wires.
<p>Incompatibility:</p> <ol style="list-style-type: none"> 1. Strong oxidizers (such as perchloric acid, nitrate, butyric acid). 2. Tetraphosphorus trisulfide. 3. Strong base (such as sodium hydroxide). 4. Perchloric acid.

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5. Strong acid (such as fuming sulfuric acid, 96 % sulfuric acid, chlorosulfuric acid).

6. Aluminum.

Hazardous Decomposition Products: -

XI. Toxicological Information

Exposure route: skin contact, inhalation, ingestion, eye contact.

Symptoms: Irritation, respiratory failure, cardiovascular failure, pulmonary edema.

Acute Toxicity:

Skin contact:

1. Liquid will cause irritation.
2. Ethylene glycol will be absorbed through the skin eczema. Symptoms are similar to ingestion.

Inhalation:

1. Its vapor and condensation will cause nose and throat irritation.
2. Cannot endure long at concentration higher than 56 ppm due to throat irritation.
3. Its vapor is low and will not cause visible intoxication at room temperature but exposure to its condensation at high temperatures will cause injury.

Swallowed:

1. Induces symptoms of suppression of central nervous system such as nausea, vomiting, lower abdominal pain, feebleness, fatigue, dizziness, absent-mindedness, convulsion, shocks, etc.
2. Will cause death due to respiratory and cardiovascular failure.
3. A dosage of 100 ml may be lethal. If patient survives, may have kidney failure after several days.
4. May cause blocked vision in some cases.

Eye contact:

1. Liquid will cause irritation and inflammation of the eyelids but will not cause permanent damage.
2. Steam and condensation will irritate eyes.

LD50 (test animal, absorption route): 4700 mg/kg (Rat, ingestion)

LC50 (test animal, absorption route): -

12mg/m³/3D (Rat, eye): causes irritation

Chronic:

Inhalation:

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1. Exposed to a concentration of under 12 ppm for 22 hours a day continuously for 28 days will only induce mild throat irritation, headache and lower back pain.
2. Prolonged exposure to vapor and condensation produced at over 100 °C will cause unconsciousness and trembling of eyeballs. 50 mg/kg (6 ~ 15 days pregnant female rat, ingestion) caused abnormal fetus development.

XII. Ecological Information

Eco-toxicity:

LC50 (Fish): 18500 ~ 4100 mg/L/96H

EC50 (aquatic invertebrates): -

Bio-concentration Factor (BCF): 10 ~ 190

Durability and Degradability:

1. Ethylene glycol inside the body will be decomposed and discharged.
2. Theoretically, in the presence of 100% oxygen, ethylene glycol will decompose completely in 1-4 days. In reality, it will probably take several weeks.
3. Will decompose in water and will not absorb the deposits.

Half-life cycle (air): 8.3~83 hours

Half-life cycle (water surface): 48~288 hours

Half-life cycle (underground water): 96~576 hours

Half-life cycle (soil): 48~288 hours

Biological Accumulation: -

Fluidity in soil:

When ethylene glycol is released into the soil, it will enter the underground. Its flowing and spreading effect is unclear.

Other adverse effects: -

XIII. Disposal Information

Disposal Information:

1. Dispose according to the waste substance clearing laws and regulations.
2. Follow the warehouse conditions in storing waste substances waiting for disposal.
3. Dispose according to special incinerating or hygienic landfill laws.

XIV. Transport Information

The United Nations Number (UN No.): -

UN Transport Name: Ethylene Glycol

Transport Hazard Classification: -

Packaging Category: -

Marine Pollutant (Yes/No): NO

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Special Transport Way and Note: -

XV. Regulation Information

Apply Regulation:

1. Occupation Safety and Sanitation Rules.
2. Regulations of Hazard Communication on Dangerous and Harmful Material.
3. Standards of Tolerable Hazardous Substance Concentration in the Air of Labor Working Environment.
4. Traffic Safety Regulations.
5. Standards for the Storage, Clearance, and Disposal of Industrial Waste.
6. Public Hazardous Materials and Flammable Pressurized Gases Establishment Standards and Safety Control Regulations.


XVI. Other Information

Reference	1. Council of Labor Affairs, Executive Yuan, Taiwan, GHS in Taiwan website. http://ghs.cla.gov.tw/tw/ghs_main.asp	
Responsible Department	Name: China Man-Made Fiber Corporation Kaohsiung Plant Address: No.8, Jingjian Road, Dashe Dist, Kaohsiung City, Taiwan Tel: (886)-7-3512161~9	
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Date	2022/5/6	
Note	The "-" symbol in the text above indicates that there is no current available data while the "/" symbol indicates that this field is not applicable to this substance.	

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Modify day	Edition	Update content decription
2019/8/1	1	First edition
2020/9/11	2	<p>1. Hazard Warning Information: Warning sign: Dangerous Modify” Warning sign: Danger” May be harmful if ingested. Modify” May be harmful if swallowed” Causes eye irritation. Modify” Causes serious eye irritation” Prolonged or repeated exposure will cause organ damage Modify” Causes damage to organs through prolonged or repeated exposure”</p> <p>3. IV. First Aid Measures Ingestion: Modify” Swallowed”</p> <p>4.XI. Toxicological Information Ingestion: Modify” Swallowed”</p>
2022/5/6	3	<p>1. II. Hazard Identification: Class 5 acute toxic substance (ingestion)</p>

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	<p>Modify” Class 5 acute toxic substance (swallowed)”</p> <p>class 2 serious eye injury/irritation substance</p> <p>Modify” Class 2B serious eye injury/irritation substance”</p> <p>class 1 specific target organ systematic toxicity - repeated exposure</p> <p>Modify” class 2 specific target organ systematic toxicity - repeated exposure”</p> <p>”</p> <p>DELTED “Symbols:  ”</p> <p>Warning sign: Danger</p> <p>Modify” Warning sign: Warning”</p> <p>2. V. Fire Fighting Measure</p> <p>Special Protection Equipment:</p> <p>Fire fighters must wear air respirator, protective gloves and fire-fighting outfits.</p> <p>DELTED” Fire fighters must wear air respirator, protective gloves and fire-fighting outfits”</p> <p>3. XI. Toxicological Information</p> <p>Inhalation:</p> <p>Cannot endure long at concentration higher than 50 ppm due to throat irritation.</p> <p>Modify” Cannot endure long at concentration higher than 56 ppm due to throat irritation”</p>
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