TCI AMERICA

SAFETY DATA SHEET

Revision number: 2
Revision date: 10/06/2014

1. IDENTIFICATION

Product name: Ethylene Glycol
Product code: E0105

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
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Responsible department:
TCI America
Environmental Health Safety and Security
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2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200:
Eye Damage/Irritation [Category 2B]
Specific Target Organ Toxicity (Single Exposure) [Category 1]
Specific Target Organ Toxicity (Repeated Exposure) [Category 1]

Signal word: Danger!

Hazard Statement(s):
Causes eye irritation
Causes damage to: Respiratory System Heart Kidney Central Nervous System
Causes damage to organs: Respiratory System Heart Central Nervous System through prolonged or repeated exposure.

Pictogram(s) or Symbol(s):

Precautionary Statement(s):

[Prevention] Wash hands and face thoroughly after handling. Do not breathe fume, mist, vapors or spray. Do not eat, drink or smoke when using this product.

[Response] If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention. If exposed: Call a poison center or doctor. Get medical advice or attention if you feel unwell.

[Storage] Store locked up.

[Disposal] Dispose of contents and container in accordance with US EPA guidelines for the classification and determination of hazardous waste listed in 40 CFR 261.3. (See Section 13)

Hazards not otherwise classified: [HNOC] Causes mild skin irritation. May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance
Components: Ethylene Glycol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Percent: >99.5%(GC)
CAS Number: 107-21-1
Molecular Weight: 62.07
Chemical Formula: $C_2H_6O_2$
Synonyms: 1,2-Dihydroxyethane

4. FIRST-AID MEASURES

Inhalation: Call a poison center or doctor if you feel unwell. Effects of exposure (inhalation) to substance may be delayed. Inhalation of vapors or contact with substance will result in contamination and potential harmful effects. Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Skin contact: Call a poison center or doctor if you feel unwell. Effects of exposure (skin contact) to substance may be delayed. Remove and wash contaminated clothing before re-use. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Eye contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Contact with material may irritate or burn eyes. Call emergency medical service. Move victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Ingestion: Do not induce vomiting with out medical advice. Effects of exposure (ingestion) to substance may be delayed. If swallowed, seek medical advice immediately and show the container or label. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms/effects:

Acute: Redness.
Delayed: No data available

Immediate medical attention: If breathing has stopped, perform artificial respiration. Use first aid treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, CO_2 , water spray, or alcohol-resistant foam. Consult with local fire authorities before attempting large scale fire fighting operations.

Specific hazards arising from the chemical
Hazardous combustion products: These products include: Carbon oxides
Other specific hazards: Closed containers may explode from heat of a fire.

Special precautions for fire-fighters:
Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material. Containers may explode when heated. Move containers from fire area if you can do it without risk.
Special protective equipment for fire-fighters:
Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid contact with skin, eyes, and clothing. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8). Warn unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Personal protective equipment: Wear eye protection (splash goggles) and face protection (full length face shield). Lab coat. Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear protective gloves (nitrile).

Emergency procedures: Do not clean-up or dispose except under supervision of a specialist. In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and excercise caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements or confined areas; dike if needed.

6. ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up:
ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if without risk. Ventilate the area. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. Use clean non-sparking tools to collect absorbed material.
Environmental precautions:
Keep away from living quarters. Prevent further leakage or spillage if safe to do so. Water runoff can cause environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

7. HANDLING AND STORAGE

Precautions for safe handling: Do NOT breath gas, fumes, vapor, or spray. Avoid contact with skin and eyes. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition.

Conditions for safe storage: Store locked up. Keep containers tightly closed in a cool, well-ventilated place. Keep away from incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods. Store under inert gas (e.g. Argon). Hygroscopic material, store in a tightly sealed container.

Storage incompatibilities: Combustible substances, Store away from oxidizing agents

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits:
ACGIH TLV (CEIL): 100 mg/m^3 (H)

Appropriate engineering controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Ventilation is normally required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.

Personal protective equipment

Respiratory protection: Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Hand protection: Wear protective gloves.
Eye protection: Splash goggles.
Skin and body protection: Lab coat.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Liquid
Form: Clear
Color: Colorless - Almost colorless
Odor: Odorless
Odor threshold: No data available

Melting point/freezing point:	-13°C (9°F)	**pH:**	No data available
Boiling point/range:	196°C (385°F)	**Vapor pressure:**	7Pa/20°C
Decomposition temperature:	No data available	**Vapor density:**	2.1
Relative density:	1.12	**Dynamic Viscosity:**	No data available
Kinematic Viscosity:	No data available		
Partition coefficient: n-octanol/water (log P_{ow})	-1.36	**Evaporation rate:** (Butyl Acetate = 1)	No data available
Flash point:	127°C (261°F)	**Autoignition temperature:**	398°C (748°F)
Flammability (solid, gas):	No data available	**Flammability or explosive limits:**	
		Lower:	3.2%
		Upper:	15.3%

Solubility(ies):
Water: Miscible
Miscible: Alcohols, Acetone, Pyridine, Glycerol , Acetic acid
Very slightly soluble: Ether, Benzene, Chloroform, Carbon tetrachloride, Carbon disulfide

10. STABILITY AND REACTIVITY

Reactivity: Not Available.

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Chemical Stability: Stable under recommended storage conditions. (See Section 7)
Possibility of Hazardous Reactions: No hazardous reactivity has been reported.
Conditions to avoid: Avoid excessive heat and light.
Incompatible materials: Oxidizing agents
Hazardous Decomposition Products: No data available

11. TOXICOLOGICAL INFORMATION

RTECS Number: KW2975000

Acute Toxicity:
ihl-rat LC:>200 mg/m^3/4H

orl-hmn LDLo:398 mg/kg

orl-rat LD50:4700 mg/kg

skn-rbt LD50:9530 uL/kg

ipr-rat LD50:5010 mg/kg

Skin corrosion/irritation:
skn-rbt 555 mg open MLD

Serious eye damage/irritation:
eye-rbt 500 mg/24H MLD

eye-rbt 1440 mg/6H MOD

eye-rbt 100 mg/1H MLD

Respiratory or skin sensitization:
No data available

Germ cell mutagenicity:
dni-hmn-lym 320 mmo/L

msc-mus-lym 100 mmol/L

Carcinogenicity:

No data available

IARC: No data available **NTP:** No data available **OSHA:** No data available

Reproductive toxicity:
orl-mus TDLo:850 mg/kg(multigenerations)

orl-rat TDLo:33750 mg/kg(6-20D preg)

Routes of Exposure: Inhalation, Eye contact, Ingestion, Skin contact.
Symptoms related to exposure:
Eye contact may result in redness or pain. Skin contact may result in redness, pain or dry skin. Overexposure may result in serious illness or death.
Potential Health Effects:
Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Overexposure may result in serious illness or death.
Target organ(s):
Causes damage to: Respiratory System Heart Kidney Central Nervous System
Causes damage to organs: Respiratory System Heart Central Nervous System through prolonged or repeated exposure.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fish: 96h LC50:>100 mg/L (Oryzias latipes)
Crustacea: 48h EC50:>1100 mg/L (Daphnia magna)
Algae: 72h EC50:>1000 mg/L (Selenastrum capricornutum)

Persistence and degradability: 90 % (by BOD), 100 % (by TOC), 100 % (by GC)
Bioaccumulative potential (BCF): 10
Mobillity in soil: No data available
Partition coefficient: -1.36
n-octanol/water (log P_{ow})
Soil adsorption (Koc): 1
Henry's Law: 6.1 x 10^{-3}
constant (PaM^3/mol)

13. DISPOSAL CONSIDERATIONS

Disposal of product: Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.

Disposal of container: Dispose of as unused product. Do not re-use empty containers.

Other considerations: Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION

DOT (US) Non-hazardous for transportation.

IATA Non-hazardous for transportation.

IMDG Non-hazardous for transportation.

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA 8b.):
This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations

CERCLA Hazardous substance and Reportable Quantity:

SARA 313: Listed
SARA 302: Not Listed

State Regulations

State Right-to-Know

Massachusetts Listed
New Jersey Listed
Pennsylvania Listed
California Proposition 65: Not Listed

Other Information

NFPA Rating:

Health: 2
Flammability: 1
Instability: 0

HMIS Classification:

Health: 2
Flammability: 1
Physical: 0

International Inventories

WHMIS hazard class: D2B: Materials causing other toxic effects. (Toxic)
EC-No: 203-473-3

16. OTHER INFORMATION

Revision date: 10/06/2014
Revision number: 2

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.