



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Triethylene glycol
HCI PRODUCT ID NUMBER: 03265
SYNONYMS: TEG, Glycol-bis(hydroxyethyl)ether
CHEMICAL FAMILY NAME: Glycol
NFPA HAZARD RATINGS(H-F-R) : 1-1-0
HMIS HAZARD RATINGS(H-F-R): 1-1-0
DISTRIBUTOR: HCI USA Distribution Companies
IN CASE OF EMERGENCY CALL: 1-800-424-9300

MSDS PREPARED BY: HCI Technical Resource Center
 St. Louis, MO 63111
 (314) 353-6500

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NUMBERS	Percent
Triethylene glycol	000112-27-6	100

Trace impurities and additional material names not listed above may also appear in the Regulatory Information Section (Section 15) towards the end of the MSDS. These materials may be listed for local "Right to Know" compliance and for other reasons.

3. HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW: CAUTION! May cause irritation to skin, eyes, and respiratory tract. Harmful if swallowed.

POTENTIAL HEALTH EFFECTS:

SKIN CONTACT: Brief contact is not irritating.
 Prolonged or repeated contact with skin may cause irritation.

SKIN ABSORPTION: No data available

EYES: Contact with the eyes may cause irritation.

INGESTION: Ingestion may cause gastrointestinal irritation, nausea, vomiting, diarrhea, drowsiness, and loss of consciousness.
 May result in kidney and liver damage.

INHALATION: Inhalation is believed to be minimally irritating.

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MEDICAL CONDITIONS AGGRAVATED:

No data available

WARNING: Contains a chemical known to the State of California to cause cancer.
Components found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT	NTP	IARC	OSHA
Triethylene glycol	N	N	N

4. FIRST AID MEASURES

SKIN CONTACT:	Remove contaminated clothing and shoes. Wash exposed areas with soap and water. Call a physician if irritation persists.
EYE CONTACT:	Flush eyes with water for at least 15 minutes. Call a physician if irritation persists.
INGESTION:	Call a physician immediately!
INHALATION:	Remove to fresh air. If breathing has stopped, give artificial respiration. Call a physician if irritation persists.
NOTES TO PHYSICIAN:	No data available

5. FIRE FIGHTING MEASURES**FIRE AND EXPLOSIVE PROPERTIES**

FLASH POINT:	340 °F
FLASH POINT:	171.09 °C
FLASH POINT METHOD:	PMCC
LOWER FLAMMABILITY LIMIT:	0.9 Calculated
UPPER FLAMMABILITY LIMIT:	9.2 Estimated
AUTOIGNITION TEMPERATURE:	674.6 °F, 356.96 °C
FLAMMABILITY CLASSIFICATION:	IIIB
EXTING. MEDIA:	Use water spray, carbon dioxide, dry chemical, or foam.
FIRE FIGHTING :	Use fog nozzles if water is used. Water or foam may cause frothing. Cool fire-exposed containers with water spray.
PROTECTIVE EQUIPMENT:	Use NIOSH-approved self-contained breathing apparatus and complete protective clothing when fighting chemical fires.
FIRE HAZARDS:	This material forms peroxides of unknown stability. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

6. ACCIDENTAL RELEASE MEASURES

- SMALL SPILLS:** Contain spill and ventilate area. Absorb on inert media and containerize for disposal.
- LARGE SPILLS:** Contain spill and ventilate area. Permit only trained personnel wearing full protective equipment to enter the spill area. Collect the spill in a waste container or remove with a vacuum truck. Prevent spill from entering natural watercourses.

PROTECTIVE EQUIPMENT\ SPILL-RELEASE INSTRUCTIONS:

Wear complete protective clothing when cleaning up chemical spills. Spills and releases may have to be reported to federal and/or local authorities. See the Regulatory Information section (section 14) regarding reporting requirements.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with skin, eyes, and clothing.
 Avoid breathing product vapors and mists.
 Do not take internally.
 Wash thoroughly after handling this material.
 Use this material only with adequate ventilation.

STORAGE : Keep container closed when not in use.
 Store in a cool, dry place.
 This material should avoid direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**ENGINEERING CONTROLS:**

Special ventilation is not required under normal use. Use local exhaust ventilation where dust, mist, or spray may be generated.

PERSONAL PROTECTIVE EQUIPMENT

SKIN: Wear protective gloves made of neoprene or rubber.

EYE : Wear chemical safety goggles.

RESPIRATORY: Use a NIOSH-approved respirator for dusts/mists when necessary.

OTHER: Emergency showers, eye-wash stations, and fire blankets should be accessible.
 Wear protective clothing.

EXPOSURE GUIDELINES :

INGREDIENT	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
Triethylene glycol	N/EST	N/EST	N/EST	N/EST

N/EST = Not established

See 29 CFR 1910.1000 (D) (2) and ACGIH "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices" booklet (Appendix C) for the determination of exposure limits for mixtures. Consult an industrial hygienist or similar professional to

confirm that the calculated exposure limits are appropriate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE	Colorless, viscous
ODOR:	Mild
SPECIFIC GRAVITY:	1.12
SOLUBILITY (IN WATER):	Complete
BOILING POINT (°F):	545
BOILING POINT (°C):	284.97
FREEZING POINT (°F):	19
FREEZING POINT (°C):	-7.22
MELTING POINT (°F):	19
MELTING POINT (°C):	-7.22
PRODUCT pH :	6-9.5 @ 23C
VAPOR PRESSURE:	<0.01 @ 20C
VAPOR DENSITY:	5.2
EVAPORATION RATE:	<0.001
% VOLATILES:	Negligible

10. STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Exposure to high temperatures should be minimized.
INCOMPATIBILITY:	Acids, bases, oxidizing materials
DECOMPOSITION:	Toxic oxides of carbon Unidentified organic compounds This material forms peroxides of unknown stability.

POLYMERIZATION WILL OCCUR: no

11. TOXICOLOGICAL INFORMATION

IMMEDIATE EFFECTS:

May cause irritation to skin, eyes, and respiratory tract. Harmful if swallowed. IRRITATION DATA: 500 mg/24 hours skin-rabbit mild; 500 mg eyes-rabbit mild; TOXICITY DATA: LD50: 22.06 g/kg oral-rat; LD50: 16.7 g/kg oral-mouse; LD50: 9.5 g/kg oral-rabbit; LD50: >5 g/kg skin-rabbit; LD50: 17 gm/kg oral-rat; LD50: 11700 mg/kg intravenous-rat; LD50: 8141 mg/kg intraperitoneal-mouse; LD50: 8750 mg/kg subcutaneous-mouse; LD50: 6500 mg/kg intravenous-mouse; LD50: >4500 mg/kg intravenous-dog; LD50: 8400 mg/kg oral-rabbit; LD50: >20 ml/kg skin-rabbit; LD50: 1900 mg/kg intravenous-rabbit; LD50: 7900 mg/kg oral-guinea pig; LD50: 10600 mg/kg intravenous-guinea pig; LD50: 8150 mg/kg oral-mammal

CARCINOGENICITY: No data available**MUTAGENICITY:** No data available**EPIDEMIOLOGY:** No data available**TERATOGENICITY:** No data available

REPRODUCTIVITY: TDLo: 103 gm/kg oral-rat 6-15 days pregnant female continuous; TDLo: 90160 mg/kg oral-mouse 7-14 days pregnant female continuous; TDLo: 56370 mg/kg oral-mouse 6-15 pregnant female continuous; TDLo: 323 gm/kg oral-mouse multigenerations; TDLo: 57820 mg/kg oral-mouse multigenerations

NEURTOXICITY: No data available

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA: FISH TOXICITY: LC50: 10.2 ug/L 96 hours (Mortality) Rainbow trout, donaldson trout (*Oncorhynchus mykiss*); **INVERTEBRATE TOXICITY:** EC50: 343 ug/L 48 hours (Immobilization) Water flea (*Daphnia magna*); **ALGAL TOXICITY:** MATC: 16730 ug/L 11-14 hours (Growth) Red algae (*Champia parvula*); **FATE AND TRANSPORT:** **BIOCONCENTRATION:** BCF: 857 ug/L 24 hours (Residue) Striped mullet (*Mugil cephalus*) 0.035 ug/L; **ENVIRONMENTAL SUMMARY:** Highly toxic to aquatic life. This product has a high biochemical oxygen demand and a potential to cause oxygen depletion in aqueous systems, a low potential to affect aquatic organisms, a low potential to affect secondary waste treatment microbial respiration, a low potential to affect the germination and/or early growth of some plants. This product is expected to have a low potential to bioconcentrate. After dilution with a large amount of water, followed by secondary waste treatment, this material is not expected to cause adverse environmental effects. **OXYGEN DEMAND DATA:** ThOD: 1.6 g oxygen/g; COD: 1.59 g oxygen/g; BOD-5: 0.03 g oxygen/g; BOD-20: 0.27 g oxygen/g; **ACUTE AQUATIC EFFECTS DATA:** LC50: >5000 mg/L 24 hours Goldfish; LC50: >10000 mg/L 48 hours Golden orfe; LC50: >1000 ul/L 96 hours Fathead minnow; LC50: >1000 ul/L 96 hours Daphnid; **BIODEGRADATION:** Using activated sludge acclimated for 20 days at 20 C (68 F), this material served as the sole carbon source, and 97.7% COD removal was observed over a period of up to 120 hours at a rate of 27.5 mg COD removal was observed over a period of up to 120 hours at a rate of 27.5 mg COD removed/gram of dry inoculum/hour. **SECONDARY WASTE WATER TREATMENT EFFECTS:** IC50: >5000 mg/L 5 hours; **7-DAY PLANT GERMINATION EFFECTS-**No adverse concentration: Ryegrass: >1000 ul/L; Radish: >1000 ul/L; Lettucc: >1000 ul/L; **7-DAY PLANT SEEDLING EFFECTS-**No adverse effect concentration: Marigold: >1000 ul/L; Radish: >1000 ul/L; Corn: >1000 ul/L; Lettuce: >1000 ul/L

13. DISPOSAL CONSIDERATIONS

RCRA WASTE: No

RCRA ID NUMBER: Not applicable

VOC CONTENT (lbs/gal): 0.017

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Waste Disposal Procedure: Discharge, treatment, or disposal may be subject to Federal, State, or Local laws. State and Local regulations and restrictions are complex and may differ from Federal disposal regulation. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA Classification and the proper disposal method.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME: Not D.O.T. regulated
D.O.T. HAZARD CLASS: None
DOT ID NUMBER: UN N/AP
DOT PACKING GROUP: None
DOT RQ (lbs): N/AP
OTHER: None
IMDG HAZARD CLASS: None
ICAO HAZARD CLASS: None

15. REGULATORY INFORMATION

TSCA (Toxic Substance Control Act): yes
SECTION 311/312 HAZARD CLASS: Immediate (acute) health hazard
WHMIS CLASSIFICATION (CANADA): Not restricted
FOREIGN INVENTORY: Canadian DSL (Domestic Substances List)
 EINECS (European Inventory of Existing Commercial Chemical Substances)
 CEPA (Canadian Environmental Protection Act)

ADDITIONAL REGULATORY INFORMATION

WARNING: Contains a chemical known to the State of California to cause cancer. (1,4-Dioxane)
MASSACHUSETTS SUBSTANCE LIST: 1,4-Dioxane
NEW JERSEY SUBSTANCE LIST: Not listed
PENNSYLVANIA HAZARDOUS SUBSTANCE LIST: Triethylene glycol

SARA TITLE III (Superfund Amendments and Reauthorization Act):

INGREDIENTS	CAS NUMBERS	Section 313	Section 302
Triethylene glycol	000112-27-6	N	N

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This product may contain trace amounts of 1,4-Dioxane (CAS # 123-91-1).

16. OTHER INFORMATION

CREATION DATE: 08/19/1997**REVISION DATE:** 05/27/1999**DISCLAIMER:**

The information herein is presented in good faith and is believed to be correct as of the date hereof. However, HCI makes no representation as to the completeness and accuracy thereof. Users must make their own determination as to the suitability of the product for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature with respect to the product or to the information herein is made hereunder. HCI shall in no event be responsible for any damages of whatsoever nature directly or indirectly resulting from the publication, or use of, or reliance upon the information contained herein.