

1. PRODUCT NAME: Ethylene Glycol

2. CHEMICAL NAME:

3. SYNONYMS: EG

4. CAS NUMBER: 107-21-1

5. COMPOSITION: Ethylene Glycol
(107-21-1)-100%

6. PROPERTIES: ODOR & APPEARANCE: clear, colorless, hygroscopic odorless, syrupy liquid with a sweet taste
ODOR THRESHOLD: not known – odorless (Note: Odor is usually a sign of impure product.)
VAPOUR PRESSURE: 0.05mmHg/0.0071Pa (20 c)
EVAPORATION RATE (butyl Acetate=1): not known – essentially not volatile
VAPOR DENSITY (air=1): 2.1
BOILING RANGE: 198 c
FREEZING POINT: -13 c
SPECIFIC GRAVITY: 1.115 (20/20 c)
WATER SOLUBILITY: complete
IN OTHER SOLVENTS: soluble in many alcohols, ketones, ethers, esters; limited in hydrocarbons
VISCOSITY: 21 centipoise (20 c)
PH: neutral

7. HAZARDS: HMIS (USA): Health - 2, Fire - 1, Reactivity - 0
MATERIAL USE: antifreeze, humectant, plasticiser, hydraulic fluid, solvent

8. FIRE FIGHTING INFORMATION: FLASH POINT: 111 c (closed cup)
AUTOIGNITION TEMPERATURE: 398 c
FLAMMABLE LIMITS: 3.2% - 15%
COMBUSTION PRODUCTS: carbon monoxide, nitrogen oxides, smoke, part oxidized hydrocarbon fragments
FIREFIGHTING PRECAUTIONS: foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water – water jet spreads flames; firefighters must wear SCBA
STATIC DISCHARGE: will not accumulate a static charge
MECHANICAL IMPACT: not sensitive
CHEMICAL STABILITY: stable; will not polymerize
REACTIVE WITH: strong oxidizing agents; strong alkalies, strong acids
DECOMPOSITION PRODUCTS: none apart from Hazardous Combustion Products

9. PERSONAL PROTECTION MEASURES: HANDS: not required, but butyl or neoprene rubber gloves may be worn
EYES: safety glasses with side shields
RESPIRATOR: not required unless high temperature processing, creating vapor, is carried out or if mist is generated by aeration; if ventilation is inadequate (CEV, (2) above), use organic vapor cartridge
CLOTHING: not required, but non-slip footwear or flooring strongly recommended
Note: Spilled product may, depending on the type of flooring and footwear, be very slippery.

10. FIRST AID PROCEDURES: SKIN: Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.

IN CASE OF
TRANSPORT EMERGENCY
CONTACT CHEMTREC
USA: 1-800-424-9300
INTERNATIONAL: 1-703-527-3887



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INHALATION: Remove from contaminated area promptly. **CAUTION:** Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

NOTE TO DOCTER: Following gastric emptying, administration of ethanol and calcium gluconate may be helpful. If kidney function is normal, give 4 litres of fluid daily to increase glycol excretion. If renal function is poor, dialysis should be used to speed glycol elimination.

11. EXPOSURE CEV* ppm: 50*

LIMITS: LD50 ORAL: 1650**

SKIN (mg/kg): 9500

LC50ppm INHALATION: 10,900

*Note: This is a CEV or Ceiling Exposure Value, Not TLV or TWAEV.

**Note: Oral LD50 varies substantially among species.

12. TOXICOLOGICAL EFFECTS ACUTE EXPOSURE

INFORMATION: SKIN CONTACT: virtually no effect

SKIN ABSORPTION: slight; no toxic effects anticipated by this route

EYE CONTACT: mildly irritating, will not damage eyes

INHALATION: vapor highly irritating (above ~80ppm); exposure unlikely due to low vapor pressure

INGESTION: product is an alcohol, absorption causes some similar symptoms, initially stimulating & intoxicating, later depression followed by convulsions & coma, cardiopulmonary failure can occur, survival may be followed by renal failure & even death (Chronic, below) after ~3 days

EFFECTS OF CHRONIC EXPOSURE

GENERAL: prolonged absorption may cause deterioration of vision and kidney damage, Note: Mammalian metabolism of E.G creates oxalic acid whose toxicity & renal crystallisation are likely to be responsible for the lethal renal effects.

SENSITISING: not a sensitizer (just 2 cases of human sensitization have been reported)

REPRODUCTIVE EFFECT: teratogen in rodents given high, but sublethal doses; no known effect in human

SYNERGISTIC WITH: not known

ESTIMATED LD50: 1650 - 2000mg/kg (oral, rat), 4700 - 5000mg/kg (oral, rat), 5500mg/kg (oral, mouse & dog); 6600mg/kg (oral, guinea pig); 9500mg/kg (skin, rabbit)

ESTIMATED LC50: 80,000ppm [2000MG/M3] (inhalation, mouse), 10,900ppm [27,500MG/M3] (inhalation, rat).

13. ECOLOGICAL This product cannot accumulate in living tissue; this product is readily and rapidly (~4days) biodegradable in the presence of oxygen; anaerobic biodegradation in ~7days; no particularly toxic to marine life (plant or animal).

14. DISPOSAL DO NOT FLUSH TO SEWER; may be incinerated in approved facility.
CONSIDERATIONS:

15. CARCINOGENIC Tumorigen in rodents given high, but sub lethal doses; not a human carcinogen.
PROPERTIES &
NOTIFICATIONS:



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16. TRANSPORT USA 49 CFR
INFORMATION: Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NOS
Technical Name: CONTAINS ETHYLENE GLYCOL
Hazard Class: 9
ID Number: NA 3082
Packing Group: PG III
17. HANDLING & STORAGE: Store and use a cool dry environment, away from sources of ignition, heat and oxidizing agents. Do not cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace. This product is very sweet – keep away from children or animals – deal promptly with spills.
18. ACCIDENTAL LEAK PRECAUTION: dyke to control spillage and prevent environmental contamination.
RELEASE HANDLING SPILL: recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & MEASURES: pick up using non-sparking plastic aluminium shovel & store in closed containers for recycling or disposal.
19. REGULATORY INFORMATION: ALLOWABLE TOLERANCE: Ethylene glycol is exempted from the requirement of a tolerance when used as a antifreeze or deactivator for all pesticides used before crop emerges from soil and in herbicides before or after crop emerges in accordance with good agricultural practice as inert (or occasionally active) ingredients ingredients in pesticide formulations applied to growing crops only. Ethylene glycol as a component of pesticide formulations is exempt from the requirement of a tolerance when used in foliar applications to peanut plants.
- OSHA STANDARDS
Vacated 1989 OSHA PEL Ceiling value 50 ppm (125 mg/cu m) is still enforced in some states.
- NIOSH RECOMMENDATIONS
NIOSH questioned whether the OSHA PEL proposed for ethylene glycol [ceiling 50 ppm] is adequate to protect workers from recognized health hazards.
- THRESHOLD LIMIT VALUES
Ceiling Limit: 100 mg/cu m. /Aerosol only/; Not classifiable as a human carcinogen.
- ATMOSPHERIC STANDARDS: Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Ethylene glycol is included on this list.
- FEDERAL & STATE DRINKING WATER GUIDELINES
EPA 7000 ug/l [QR] [REF – 146]
Arizona 5500 ug/l [QR] [REF – 146]
Florida 14,000 ug/l [QR] [REF – 146]
Massachusetts 14,000 ug/l [QR] [REF – 146]
Maine 5500 ug/l [QR] [REF – 146]
Minnesota 10000 ug/l [QR] [REF – 146]
North Carolina 7000 ug/l [QR] [REF – 146]
New Hampshire 7000 ug/l [QR] [REF – 146]
New Jersey 290 ug/l [QR] [REF – 146]
- CERCLA REPORTABLE QUANTITIES: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000 lb or 2270 kg. The NRC toll free number is (800) 424-8802; In the Washington D.C metropolitan area (202) 426-2675. The rule for determining when notification is required is stated in 40 CFR 302.4. (section IV. D.3.b).



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FIFRA REQUIREMENTS

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FDA REQUIREMENTS

Ethylene glycol is an indirect food additive for use only as a component of adhesives.