

PRODUCT NAME: polycool EG -25
PART NUMBER: 060340
REVISION DATE: 01/14/2010

SUPERSEDES: 11/30/2006

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

Chemical Name: Ethylene glycol
CAS no. 107-21-1
Product Description: colorless liquid with sweet odor.

Supplier:
Univar USA Inc.
17425 NE Union Hill Rd
Redmond, WA 98052
Telephone: (425)889-3400

Bottler:
Accumetric Inc
411 E Dixie
Elizabethtown, KY 42701

Distributor:
PolyScience
6600 W Touhy Ave
Niles, IL 60714
Telephone: (847)647-0611

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS, CALL - CHEMTREC (800) 424-9300

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Color: Colorless
Physical State: Liquid
Odor: Sweet

Hazards of Product: WARNING! Harmful or fatal if swallowed. May cause eye irritation. Isolate area.

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

POTENTIAL HEALTH EFFECTS:

Eye Contact: May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation.

Skin Contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin irritaion with local redness.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.

Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptom such as headache and nausea.

Ingestion: Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cariodpulmonary effects (metabolic acidosis), and kidney failure.

POTENTIAL HEALTH EFFECTS continued.

EFFECTS OF REPEATED EXPOSURE:

Repeated excessive exposure may cause irritation of the upper respiratory tract. In humans, effects have been reported on the following organs: Central nervous system. Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney, Liver.

BIRTH DEFECTS/DEVELOPMENTAL EFFECTS:

Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposure by inhalation or skin contact, the primary routes of occupational exposure, had minimal effects on the fetus, in animal studies.

REPRODUCTIVE EFFECTS:

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

NFPA Ratings (0-4):	Health:	1
	Fire:	1
	Reactivity:	0

3. COMPOSITION/INGREDIENTS INFORMATION

COMPONENT	CAS NO.	WEIGHT %
Ethylene glycol	107-21-1	>99.0%

4. FIRST-AID MEASURES

EYE CONTACT:	Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
SKIN CONTACT:	Wash skin with plenty of water.
INHALATION:	Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth, use rescuer protection (pocket masks, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility immediately.
INGESTION:	Do not induce vomiting. Seek medical attention immediately. If person is fully conscious, give 1 cup or 8 ounces (240ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8ml) liquor for each 10 pounds of body weight, or 2ml per kg body weight (e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36ml for an 18kg child).
NOTE TO PHYSICIAN:	If several ounces (60-100ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effect (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis & thiamine 100mg plus pyridoxine 50mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100-150mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol*) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 434-9); loading dose 15mg/kg intravenously, followed by bolus dose of 10mg/kg every 12 hours; after 48 hours, increase bolus dose to 15mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG, or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Person receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

FIRE FIGHTING PROCEDURE:

Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

HAZARDOUS COMBUSTION PRODUCTS:

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide, Carbon dioxide.

6. ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Collect in suitable and properly labeled container.

Small spills: Absorb with materials such as: Cat litter, Sand, Sawdust, Vermiculite, Zorb-all*, Hazorb*.

Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Ignition Sources Removal: Keep away from sources of ignition.

Dust Control: Not applicable.

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls/Personal Protection. Refer to Section 7, Storage and Handling, for additional precautionary measures.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. STORAGE AND HANDLING

HANDLING

GENERAL HANDLING:

Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. Spills of these organic materials on hot fibrous insulations may lead to lowering of the Autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, Exposure Controls/Personal Protection.

STORAGE

Do not store near food, foodstuffs, drugs or potable water supplies. Additional storage and handling information on this product may be obtained by calling Univar's sales or customer service contact. Ask for a product brochure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Component	List	Type	Value
Ethylene Glycol	ACGIH	Ceiling	100mg/m ³
		Aerosol	

Personal Protection

EYE/FACE PROTECTION:

Use safety glasses. If exposure causes eye discomfort, use a full-face respirator.

SKIN PROTECTION:

Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. When handling hot material, protect skin from thermal burns as well as from skin absorption.

HAND PROTECTION:

If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Use gloves with insulation for thermal protection, when needed. Examples of preferred glove barrier materials include: Butyl rubber, Natural rubber ("latex"), Neoprene, Nitrile/butadiene rubber ("nitrile" or "NBR"), Polyethylene, Ethyl vinyl alcohol laminate ("EVAL"), Polyvinyl alcohol ("PVA"), Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take in to account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

PERSONAL PROTECTION continued.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

INGESTION: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

ENGINEERING CONTROLS

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Colorless
Odor:	Sweet
Flash Point - Closed Cup:	116°C (241°F) ASTM D56
Flammable Limits in Air:	Lower: 3.2% (V) Literature Upper: 15.2% (V) Literature
Autoignition Temperature:	427°C (801°F) Literature
Vapor Pressure:	0.05mmHg @ 20°C Literature
Boiling Point (760mmHg):	>197°C (>387°F) Literature
Vapor Density (air = 1):	2.1 Literature
Specific Gravity (H ₂ O = 1):	1.115 20 c/20 Literature
Freezing Point:	-13°C (9°F) Literature
Melting Point:	Not applicable
Solubility in Water (by weight):	100% Literature
pH	9 Literature
Molecular Weight:	62g/mol Literature
Octanol/Water Partition	-1.36 Measure Coefficient
Evaporation Rate (Butyl Acetate = 1):	0.01 Literature

10. STABILITY AND REACTIVITY**Stability/Instability**

Stable under recommended storage conditions. See Storage and Handling, Section 7

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Thermal Decomposition.

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to:

Aldehydes, Ketones, Organic acids.

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION**Acute Toxicity****Ingestion**

For ethylene glycol: Lethal Dose, Human, adult 3 ounces

LD50, Rat: 6,000-13,000mg/kg

Skin Absorption: LD50, Rabbit: >22,270mg/kg

Inhalation: LC50, 7 h, Aerosol, Rat: >3.95mg/L

Repeated Dose Toxicity: Repeated excessive exposure may cause irritation of the upper respiratory tract. In humans, effects have been reported on the following organs:

Central nervous system. Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs:

Kidney, Liver.

Chronic Toxicity and Carcinogenicity: Ethylene glycol did not cause cancer in long-term animal studies.

Developmental Toxicity: Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effects on the fetus in animal studies.

Reproductive Toxicity: Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

Genetic Toxicology: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

CHEMICAL FATE

Movement & Partitioning

Bioconcentration potential is low (BCF <100 or Log Pow <3). Potential for mobility in soil is very high (Koc between 1 and 50). Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Henry's Law Constant (H): 8.05E-09 atm·m³/mole; 25 C Estimated

Partition coefficient, n-octanol/water (log Pow): -1.36 Measured

Partition coefficient, soil organic carbon/water (Koc): 1 Estimated

Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water	Biota	Soil	Sediment
2.1%	98%	<0.01%	<0.01%	<0.01%

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches >70% mineralization in OECD test(s) for inherent biodegradability). Indirect Photodegradation with OH Radicals.

Rate Constant	Atmospheric Half-Life	Method
8.32E-12 cm ³ /s	15 h	Estimated

OECD Biodegradation Test

Biodegradation	Exposure Time	Method
>94%	28 d	OECD 301 F Test

Theoretical Oxygen Demand: 1.29mg/mg

ECOTOXICITY

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (*Oncorhynchus mykiss*), static, 96 h: 18,000 – 46,000 mg/L

Aquatic Invertebrate Acute Toxicity

LC50, water flea *Daphnia magna*, static, 48 h: 46,300 – 51,000 mg/L

Aquatic Plant Toxicity

EC50, green alga *Selenastrum capricornutum*, biomass growth inhibition, 96 h: 9,500 – 13,000 mg/L

Toxicity to Micro-organisms

EC50, OECD 209 Test; activated sludge, respiration inhibition, 30 min: 225 mg/L

13. DISPOSAL CONSIDERATIONS

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Water characterizations and compliance with applicable laws are the responsibility solely of the waste generator. WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: 3. Composition/Ingredients Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler, Reclaimer, Incinerator or other thermal destruction device. As a service to our customers, Univar or the supplier can provide names of information resources to help identify water management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Please contact Univar's or the supplier's Customer Information Group (telephone number in Section 1 of this document) for further details.

14. TRANSPORTATION INFORMATION

DOT Non-Bulk

NOT REGULATED

DOT Bulk

Proper Shipping Name: OTHER REGULATED SUBSTANCES, LIQUID, NOS

Technical Name: CONTAINS ETHYLENE GLYCOL

Hazard Class: 9 ID Number: NA3082 Packing Group: PG III

TRANSPORTATION INFORMATION continued.

IMDG

Proper Shipping Name: OTHER REGULATED SUBSTANCES, LIQUID, NOS

Technical Name: CONTAINS ETHYLENE GLYCOL

Hazard Class: 9 ID Number: NA3082 Packing Group: PG III

Marine Pollutant: No.

THIS SHIPMENT IS MARKED, LABELED AND/OR PLACARDED AND DESCRIBED IN ACCORDANCE WITH US DOT REGULATIONS AND IS NOT REGULATED BY IMDG.

ICAO/IATA

NOT REGULATED

Additional Information

Reportable quantity: 5,05 lb – ETHYLENE GLYCOL

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is a Hazardous Chemical as defined by the OSHA Hazard communication Standard, 29 CFR 1910.1200 Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed 40 CFR 372.

Component	CAS #	Amount
Ethylene Glycol	107-21-1	>99.0%

Pennsylvania (Worker and Community Right-to-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List: The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Ethylene Glycol	107-21-1	>99.0%

Pennsylvania (Worker and Community Right-to-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List: To the best of our knowledge, this product does not contain chemical levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986) WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
Acetaldehyde	75-07-0	<= 8.0 PPM
1,4-Dioxane	123-91-1	<= 0.25 PPM

U.S. Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

European Inventory of Existing Commercial Chemical Substances (EINECS)

This product is on the EINECS inventory.

CEPA –Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. OTHER INFORMATION

Recommended Uses and Restrictions

For industrial use. It is recommended that you use this product in a manner consistent with the recommended use.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guidelines
WEEL	Workplace Environmental Exposure Level
HAZ DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

FOR ADDITIONAL INFORMATION

CONTACT MSDS COORDINATOR (UNIVAR USA INC) DURING BUSINESS HOURS, PACIFIC TIME (425) 889-3400

NOTICE

MSDS prepared by UNIVAR USA.

Product manufactured by UNIVAR, bottled and packed for distribution by Accumetric, and distributed by PolyScience.

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