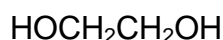


Technical Bulletin**ETHYLENE GLYCOL – UNSATURATED POLYESTER RESIN GRADE**

1,2-ethanediol; Ethylene glycol; Monoethylene glycol (MEG)

ETHYLENE GLYCOL – UPR GRADE is a straight-chain aliphatic compound terminated on both ends by a hydroxyl group. It is a clear, moderately viscous, hygroscopic liquid at room temperature.

**APPLICATIONS**

- heat transfer agents
- chemical intermediates
- humectants
- unsaturated polyester resins
- plasticizers
- solvents

Large volumes of ethylene glycol are consumed as an automotive engine antifreeze/coolant. Its hygroscopicity makes it useful as a conditioning agent in adhesives, cork, vinyl floor tiles, synthetic rubber, cellulose sponges, printing inks and paper products. Additionally, it is used in the production of alkyd-type resins having linear chain structures and unsaturated polyester resins. It is also used in the dehydration of natural gas.

SALES SPECIFICATIONS

<u>Property</u>	<u>Specifications</u>	<u>Test Method*</u>
Acidity (as acetic), wt%	0.001 max.	ST-31.46, B
Appearance	Clear and substantially free of suspended matter	ST-30.1
Ash, wt%	0.001 max.	ST-31.12
Chlorides, ppm	0.1 max.	ST-4.7
Color, Pt-Co	5 max.	ST-30.12
Diethylene glycol, wt%	0.05 max.	ST-35.7
Ethylene glycol, wt%	99.9 min.	ST-35.7
Iron, ppm	0.05 max.	ST-4.9
Water, wt%	0.05 max.	ST-31.53, 5

*Methods of Test are available from Huntsman Corporation upon request.

ADDITIONAL INFORMATION**Regulatory Information**

DOT Classification	Environmentally hazardous substance, liquid, N.O.S. (Ethylene glycol)
TDG Classification	Not regulated
HMIS Code	2-1-0
WHMIS Classification	D2A
CAS Number	107-21-1

Chemical Control Laws

Australia, AICS	Listed
Canada, DSL	Listed
Europe, EINECS/ELINCS	Listed
Japan, METI	Listed
United States, TSCA	Listed

Typical Physical Properties

Boiling point, mm Hg, °C (°F)	198 (388)
Flash point, PMCC, °C (°F)	111 (232)
Freezing point, °C (°F)	-13 (8)
Molecular weight	62
pH	6.5
Specific gravity, 20/20°C	1.12
Vapor pressure, mm Hg, 20°C (68°F)	0.1
Viscosity, cSt, 20°C (68°F)	19
VOC Content by ASTM D 2369	< 1%
Water solubility (%)	> 10

PRODUCT SAFETY POLICY

It is the product safety policy of Huntsman Corporation to provide our customers with information on the safe handling and use of our products. The Material Safety Data Sheet (MSDS) should always be read and understood thoroughly before handling the product and adequate safety procedures should be followed. Information on the toxicity, environmental and industrial hygiene aspects of our products may be found in the MSDS. Precautionary measures include: use only with adequate ventilation; avoid breathing vapor, mist or gas; avoid contact with eyes, skin and clothing; keep container closed; wash thoroughly after handling.

TOXICITY AND SAFETY

For additional information on the toxicity and safe handling of this product, consult the Material Safety Data Sheet prior to use of this product.

HANDLING AND STORAGE

Ethylene glycol is a stable, non-corrosive chemical with high flash point. Since it is hygroscopic, storage vessels must be designed to minimize moisture pickup. Other possible contaminants are iron and oxygen. For longer-term storage, or where iron contamination and color are objectionable, resin linings or stainless steel and aluminum vessels are recommended. Linings based on phenolic and epoxy resins are satisfactory. Zinc or zinc alloys should not be used in glycol service. For longer-term color stability, it is recommended that the product be stored under an inert atmosphere.

Cast-iron or centrifugal pumps with stainless shafts and impellers are satisfactory. Rubber-lined or rubber-bound gaskets should be avoided. Flexible graphite filled or stainless steel double-jacketed gaskets are usually effective larger gaskets. Stainless steel winding with flexible graphite filler piping gaskets performs well. Pipe thread lubricants based on corrosion inhibiting zinc compounds or a graphite based lubricant with aluminum are generally satisfactory; however, glycols are excellent penetrants and leaks may be present where hydrostatic testing has indicated a tight system. Therefore, the system should be rechecked after the glycol has been added.

Low pressure stainless steel steam coils in storage tanks and steam tracing of transfer lines may need to be provided in cases where low environmental temperatures may make pumping of the product difficult. Flushing with water and steam can readily clean transfer or storage tanks.

AVAILABILITY

Product is available in tank cars, tank trucks or non-returnable drums (510 pounds net). Containers are stainless steel, aluminum or suitably lined. Certain government regulations may apply at the time of shipment.

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