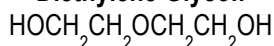


# Fast Facts

## DIETHYLENE GLYCOL (DEG)

**Diethylene Glycol (DEG)** is a colorless, low-volatility, low viscosity, hygroscopic liquid. Under normal conditions, diethylene glycol has no detectable odor; however, under high vapor concentrations, a slightly sweet odor may be detected.

**Diethylene Glycol:**

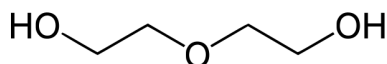


**CAS Registry Number:**

111-46-6

**Synonyms:**

DEG  
Dihydroxyethyl ether  
2,2'-Dihydroxyethyl ether  
Glycol ethyl ether  
Diglycol  
Ethylene diglycol  
3-Oxapentane-1,5-diol  
2,2' -Oxydiethanol  
Bis(beta-hydroxyethyl)ether  
Bis(2-hydroxyethyl)ether  
2-(2-hydroxyethoxy)ethanol  
3-Oxapentamethylene-1,5-diol



DEG is completely miscible with water and many organic liquids.

The hydroxyl groups on glycols undergo alcohol chemistry, thus providing opportunities for production of a wide variety of derivatives. Hydroxyls can be converted to aldehydes, alkyl halides, amines, azides, carboxylic acids, ethers, mercaptans, nitrate esters, nitriles, nitrite esters, organic esters, peroxides, phosphate esters and sulfate esters.

Because of its higher molecular weight, DEG is considerably less volatile than ethylene glycol and differs sufficiently in that it has specialized uses. The reactivity and solubility of diethylene glycol provide the basis for many applications.

Continued/-

# Fast Facts

## APPLICATIONS OF DIETHYLENE GLYCOL

The characteristics of our Di-Ethylene Glycol (DEG) products supplement our MEG portfolio, augmenting our capabilities to include applications that require hygroscopicity, lubricants and low volatility. Products that capitalize on these and other DEG properties include plasticizers; glass- and cement-grinding aids; printing ink; drywall joint compound; thermoplastic polyurethanes and emulsifiers.

PROPERTIES/CHARACTERISTICS	APPLICATIONS/USES
<b>Hygroscopicity</b>	<ul style="list-style-type: none"> <li>Gas dehydration</li> <li>Plasticizer for paper, composition cork, glues, adhesives, bookbinding and coatings</li> </ul>
<b>Lubricant</b>	<ul style="list-style-type: none"> <li>Glass-grinding aids</li> <li>Fiber-finish component</li> <li>Cement-grinding aids</li> <li>Mold release agent</li> </ul>
<b>Solvent Coupler</b>	<ul style="list-style-type: none"> <li>Stabilizer for soluble oil dispersions</li> <li>Compatibilizer for dye and printing ink components</li> </ul>
<b>Solvent</b>	<ul style="list-style-type: none"> <li>Aromatic and paraffinic hydrocarbon separations</li> <li>Printing ink/paint pigments/dyes</li> </ul>
<b>Low Volatility</b>	<ul style="list-style-type: none"> <li>Binder for foundry sand-molding</li> </ul>
<b>Freezing Point Depression</b>	<ul style="list-style-type: none"> <li>Latex paint antifreeze</li> <li>Antifreeze</li> <li>Deicing fluids</li> <li>Heat transfer fluids</li> <li>Drywall joint compound</li> <li>Belt wetting agent</li> </ul>
<b>Chemical Intermediate</b>	<ul style="list-style-type: none"> <li>Unsaturated polyester resin</li> <li>Plasticizer intermediate for nitrocellulose lacquers, enamels and adhesives</li> <li>Polyester polyols for urethane foam</li> <li>Thermoplastic polyurethanes</li> <li>Emulsifiers</li> <li>Lubricants</li> <li>Morpholine</li> </ul>

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# Fast Facts

## PHYSICAL PROPERTIES OF DEG

	Scientific	Common
Autoignition Temperature	364°C	687°F
Critical Pressure	4,605 kPa	34,540.3 mm Hg
Critical Specific Volume	0.312 L/gmol	5.00 ft <sup>3</sup> /lbmol
Critical Temperature	406.85°C	764.33°F
Dielectric Constant	31.69	31.69
Electrical Conductivity at 20°C	0.42 x 10 <sup>-6</sup> mhos/cm	0.0042 micromhos/cm
Evaporation Rate (Butyl Acetate = 1)	<0.001	<0.001
Flammable Limits in Air, Upper	12.3%(V)	12.3%(V)
Flammable Limits in Air, Lower	2.0%(V)	2.0%(V)
Flash Point, Closed Cup (Pensky-Marten Closed Cup ASTM D93)	154°C	310°F
Flash Point, Open Cup (Cleveland Open Cup ASTM D92)	163°C	325°F
Heat of Combustion at 25°C	-2,154.82 kJ/gmol	-8,730.4 Btu/lb
Heat of Vaporization at 1 atm	57.9 kJ/gmol	234.4 Btu/lb
Molecular Weight	106.12 g/mol	106.12 g/mol
Normal Boiling Point	245.3°C	473.5°F
BP/Δ P (750 to 770 mm Hg)	0.052°C/mm Hg	
Normal Freezing Point	-9.0°C	15.8°F
Onset of Initial Decomposition	240°C	464°F
Refractive Index, nD, at 20°C	1.4472	1.4472
Solubility in Water at 20°C	100.0 wt%	100.0 wt%
Solubility of Water in Diethylene Glycol at 20°C	100.0 wt%	100.0 wt%
Specific Gravity (20/20°C)	1.1182	1.1182
Specific Gravity/Δ T (10 to 40°C)	0.00073/°C	0.00073/°C
Surface Tension at 25°C	44.8 mN/m	44.8 dynes/cm
Vapor Density (air = 1)	3.65	3.65
Vapor Pressure at 20°C	0.0003 kPa	0.002 mm Hg
Viscosity at 20°C	35.7 mPs	35.7 cP

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# Fast Facts

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## NON-SUPPORTED APPLICATIONS OF DIETHYLENE GLYCOL PRODUCTS FROM MEGLOBAL

The following applications are NOT supported by MEGlobal for diethylene glycol or where its use is restricted by regulation. This non-inclusive list of applications does not imply a MEGlobal warranty or MEGlobal support of uses in applications not covered by this list.

- *The production of tobacco and in the manufacture of tobacco products (including but not limited to additives, humectants, filters, inks, and paper).*
- *The generation of artificial smoke/theatrical fogs/mist. This includes application such as artificial / e-cigarettes.*
- *As ingredient in fuel for warming foods (Sterno™-like application) or in fuel for heating an enclosed space where human exposure.*
- *In fire extinguishing sprinkler systems.*
- *In the manufacture of munitions.*
- *In the production of deicers for use on roadways, sidewalks and in aircraft lavatories.*
- *As a component of heat transfer fluids in systems where the heat transfer fluids could infiltrate (i.e., via an exchanger leak, backflow prevention failure, or other means) a potable water system.*
- *As a non-reacted component in a formulation for direct internal or external human /animal contact, including but not limited to ingestion, inhalation, and skin contact and in medical / veterinary devices and medical / veterinary applications (Examples of some such applications are uses as a direct component in foods, beverages, pharmaceuticals, cosmetics, or personal care products.).*
- *For consumer or hospital usage for deodorizing or air “purifying” purposes by spraying as an aerosol.*
- *As a non-reacted component in adhesives, plasticizers, and softening agents for packaging that has direct contact with food or beverage.*
- *As a non-reacted component in the formulation of glues, pastes, ice / heat packs or other items where the potential for significant human contact and/or ingestion exists (including but not limited to children’s school glue/paste or arts/craft glue/paste, toys, children products).*
- *As a fluid for pressure testing of pipelines.*
- *As a non-reacted component in the production of freezer gel packs used in lunch boxes, thermal food carriers or other related applications which allows for the possibility of glycol being exposed to food products or available for ingestion.*
- *For the use in the treatment of wood rot and fungus in marine applications.*

The reasons for these limitations include areas which MEGlobal has decided not to pursue for general business reasons and to minimize unnecessary risk and liabilities to the company.

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# Fast Facts

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To enter into new applications beyond the traditional standard industrial use applications, MEGlobal uses a risk assessment process whereby the application will be reviewed and a determination will be made as to whether the application meets MEGlobal's requirements and can therefore be supported by MEGlobal. Because use conditions and applicable laws may differ from one location to another and may change with time, when an application is supported by MEGlobal, MEGlobal does not warrant and is not responsible for the use in such applications.

Ends

## For Further Information:

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