

Diethylene Glycol (DEG) Product Stewardship Summary

(CAS number 111-46-6)

Chemical Formula for Diethylene Glycol (DEG)

HOCH₂CH₂OCH₂CH₂OH

What is DEG?

Diethylene Glycol is the second member of a homologous series of dihydroxyalcohols. DEG is produced in the Master Process by the direct hydration of ethylene oxide. DEG is co-produced with MEG and TEG.

How is Diethylene Glycol (DEG) Used?

DEG is used in a variety of applications and is only available in one single high purity grade.

The markets for DEG products are polyester fibres, polyethylene terephthalate (PET) plastics, coolants in automobile antifreeze, and resins. The excellent humectant (hygroscopicity) property of DEG also makes it ideal for use in fibres treatment, paper, adhesives, printing inks, leather and cellophane. DEG is also used for the removal of water from gas streams (dehydration).

Shell Chemicals does not sell to customers that use DEG in theatrical fogs or other artificial smoke generator applications, in the manufacture or preparation of foods or pharmaceuticals where glycol is not further reacted to produce a derivative product, or in aircraft de-icing applications.

Health, Safety and Environmental Considerations

Under normal conditions of use, ethylene glycols are not expected to cause irritation to the skin, eyes or respiratory tract. However, in applications where vapours or mists are created, inhaling may cause a mild burning sensation in the nose, throat and lungs.

DEG intake can be fatal if a large volume is swallowed. It may cause damage to the kidney through prolonged or repeated exposure.

No ceiling on worker exposure has been set by the American Conference of Governmental Hygienists (ACGIH). Some countries, however, have established a Workplace Exposure Limit (WEL), as in the UK where the WEL has been set at 23 ppm. If there is a potential for exposure above these limits, proper protective clothing and appropriate respiratory protection is required.

DEG is readily biodegradable, has a low potential to bioaccumulate and has low toxicity to aquatic organisms.

DEG is not flammable, unless preheated.

Storing and Transporting Diethylene Glycol (DEG)

DEG is transported by tank truck, rail car and vessel. For smaller shipments, Shell Chemical companies or their distributors package these products in iso-containers or drums. Most DEG shipments are directly from the point of manufacture to the customer, although depots and distributors are used in some countries.

Risk Characterization Summary

Risks associated with exposure to this product have been evaluated for the following “chain-of-commerce” activities: manufacture, storage, product transfer, transportation, and customers/markets. It is manufactured, stored and transported to customers in closed systems. Depending on the customer, end uses may vary from use as an intermediate for the manufacture other chemicals, commercial products, or certain formulated consumer products. Proper equipment design and handling procedures maintain low risk from exposure where used as an intermediate. Exposures may be higher in commercial and consumer applications. To minimize risk, additional controls, such as, special handling procedures and protective packaging are implemented.

This product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the chemical’s applicable [Safety Data Sheet](#), which should be consulted before use of the chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.



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