Product Safety Assessment

Diethylene Glycol Monohexyl Ether

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Names
- CAS No. 112-59-4
- EC No. 203-988-3
- Hexyl CARBITOL™ solvent
- Diethylene glycol monohexyl ether

Product Overview
- Diethylene glycol monohexyl ether is a slow-evaporating, colorless liquid with a mild ether-like odor. It is an ethylene-series (or E-series) aromatic glycol ether and is sold by The Dow Chemical Company and its global affiliates under the trade name Hexyl CARBITOL™ solvent. For further details, see Product Description.
- Diethylene glycol monohexyl ether can be used with thickeners to enhance application properties such as brushability or roll application in high-performance coatings. Diethylene glycol monohexyl ether has also shown excellent performance for removal of greasy soils and is used in metal decorative inks. For further details, see Product Uses.
- Consumer exposure may occur through the use of paints, personal-care products, or cleaning products. Check product labels for content and ventilation requirements. For further details, see Exposure Potential.
- Eye contact may cause severe irritation or chemical burns with corneal injury, which may result in permanent vision impairment. Skin contact may cause severe irritation with pain and local redness. Low toxicity if swallowed. No adverse effects are anticipated from exposure to vapor. For further details, see Health Information.
- Diethylene glycol monohexyl ether is readily biodegradable and will not persist if released to the environment. It is unlikely to accumulate in the food chain and is practically nontoxic to aquatic organisms on an acute basis. For further details, see Environmental Information.
- Diethylene glycol monohexyl ether is thermally stable at typical storage and use temperatures, but can decompose at elevated temperatures. Gas generation during decomposition can cause pressure build-up in closed systems. For further details, see Physical Hazard Information.

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Manufacture of Product

- **Location** – The Dow Chemical Company and its global affiliates have production facilities for E-series glycol ethers in Taft and Plaquemine, Louisiana; Freeport and Seadrift, Texas.
- **Process** – Diethylene glycol monohexyl ether is produced by reacting dry hexanol with ethylene oxide in an alkaline medium, using a continuous closed reactor. The reaction is shown below.

\[
2 \text{H}_2\text{C} - \text{CH}_2 \quad + \quad \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH} \quad \rightarrow \quad \text{C}_6\text{H}_{11}(\text{OCH}_2\text{CH}_2)_2\text{OH}
\]

Product Description

Diethylene glycol monohexyl ether is a clear liquid with an ether-like odor. It has a strong hydrocarbon-type solvency and a slow evaporation rate. Diethylene glycol monohexyl is an ethylene-series (or E-series) glycol ether and is manufactured and marketed by The Dow Chemical Company and its global affiliates under the trade name Hexyl CARBITOL™ solvent.

Product Uses

Diethylene glycol monohexyl ether is used in coatings, inks, and electronics applications. It is especially suited for:
- Non-grain-raising wood stains
- Industrial cleaners
- Textile printing and dyeing processes
- Mineral oil soap solvents (including floor polishes)

Exposure Potential

Diethylene glycol monohexyl ether is used in the production of industrial products, but may be found in some consumer products. Based on these uses, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in facilities that manufacture glycol ethers or in the various industrial or manufacturing facilities that use these products. Those working with glycol ethers in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit exposure. See Health Information.

- **Consumer exposure to products containing glycol ethers** – Small amounts of diethylene glycol monohexyl ether can be found in some paints or cleaning products handled by consumers. Read product labels carefully for content. Follow product instructions carefully to minimize the risk of exposure. See Health Information.

- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or ground water. Small amounts of diethylene glycol monohexyl ether may be released to the air by evaporation from cleaners, coatings, or other products containing it. It gradually photodegrades in the atmosphere. However, because diethylene glycol monohexyl ether is partially water soluble, once introduced to water, it will tend to remain dissolved in water. Because it is readily biodegradable, diethylene glycol monohexyl ether will be removed by wastewater-treatment facilities. Absorb small spills

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with materials such as sand or vermiculite. Collect spillage in suitable and properly labeled containers. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, diethylene glycol monohexyl ether should be collected in suitable and properly labeled containers and disposed of according to applicable governmental requirements. When relevant in scale or risk, the community should be notified of the hazards associated with the specific release event. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Immediately withdraw all personnel from the area. Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Alcohol-resistant foams are preferred. Use of a direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Fight the fire from a protected location or safe distance. If glycol ethers are present in a fire situation, they can produce toxic gases. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

**Eye contact** – Contact may cause severe eye irritation with corneal injury, which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

**Skin contact** – Prolonged contact is unlikely to result in absorption of harmful amounts, but may cause severe skin irritation with pain and local redness.

**Inhalation** – At room temperature, vapor exposure is minimal because of low volatility. No adverse effects are anticipated from a single exposure to vapor.

**Ingestion** – Diethylene glycol monohexyl ether has low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. However, swallowing larger amounts may cause injury.

**Repeated exposure** – Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Other** – Studies in laboratory animals indicate that diethylene glycol monohexyl ether does not interfere with reproduction and does not cause birth defects or any other fetal effects. In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were predominantly negative.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

Diethylene glycol monohexyl ether does not evaporate easily, but small amounts may evaporate from paints, coatings, or other products containing it. It gradually photodegrades in the atmosphere. Because diethylene glycol monohexyl ether is partially soluble in water, once introduced to water, it has a tendency to remain there. Diethylene glycol monohexyl ether has minimal tendency to bind to soil or sediment.
Diethylene glycol monohexyl ether is unlikely to persist in the environment. It is readily biodegradable (OECD 302B test: 100% biodegraded after 20 days), which suggests that the compound will be removed from water and soil environments, including biological wastewater-treatment facilities.

Diethylene glycol monohexyl ether is not likely to accumulate in the food chain (bioconcentration potential is low), and is practically nontoxic to fish and other aquatic organisms on an acute basis (LC$_{50}$ is >100 mg/L for most sensitive species tested.)

Additional environmental information for ethylene glycol monohexyl ether is available in the Ecological and Toxicological Data of Dow Glycol Ethers brochure.

For more information, see the relevant Safety Data Sheet.

**Physical Hazard Information**

Diethylene glycol monohexyl ether is a combustible liquid that is thermally stable at typical storage and use temperatures, but can decompose (oxidize) at elevated temperatures. Gas generation during decomposition can cause pressure build-up in closed systems. Decomposition products can include aldehydes, ketones, and organic acids.

Do not store diethylene glycol monohexyl ether in aluminum, copper, galvanized-iron, galvanized-steel, Viton, neoprene, nitrile, or natural-rubber containers. Avoid contact with strong acids, bases, and oxidizers.

Spills of diethylene glycol monohexyl ether on hot fibrous insulation may reduce the autoignition temperature of the material, resulting in the potential for spontaneous combustion.

For more information, see the relevant Safety Data Sheet.

**Regulatory Information**

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of diethylene glycol monohexyl ether. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

**Additional Information**

- Contact Us ([http://www.dow.com/oxysolvents/contact/index.htm](http://www.dow.com/oxysolvents/contact/index.htm))
- **Hexyl CARBITOL™ Solvent** Technical Data Sheet, The Dow Chemical Company, Form No. Form No. 110-00970-0713

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For more information about diethylene glycol monohexyl ether (Hexyl CARBITOL™ solvent), visit the Dow Oxygenated Solvents web site at www.dow.com/oxysolvents.

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Reference

1 Hexyl CARBITOL™ Solvent Safety Data Sheet for US, The Dow Chemical Company.
2 Hexyl CARBITOL™ Solvent Technical Data Sheet, The Dow Chemical Company, Form No. 110-00970-0713.
NOTICES:

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