Product Safety Assessment

DOWANOL™ DPM Glycol Ether [Dipropylene Glycol Monomethyl Ether]

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Names
- CAS No. 34590-94-8
- EC No. 252-104-2
- Dipropylene glycol monomethyl ether
- Dipropylene glycol methyl ether
- Methoxypropoxypropanol
- (2-methoxymethylethoxy) propanol
- 2-(2-methoxypropoxy)propanol
- DOWANOL™ DPM Glycol Ether
- DPM, DPGME

Product Overview
- Dipropylene glycol monomethyl ether (DPM) is a clear, colorless liquid with a slight ether odor. DPM is completely soluble in water and has moderate volatility. Dow manufactures and sells DPM under the trade name DOWANOL™ DPM Glycol Ether. For further details, see Product Description.
- DPM is used as a solvent, coupling agent, and coalescing agent. It is often formulated into latex coatings, water reducible coatings, and cleaners. DPM is also used as a chemical building block in the manufacture of other products. Some specific applications are household and industrial cleaners, grease and paint removers, metal cleaners, hard surface cleaners, printing ink solvents, fabric dye coupling agents, cosmetics, and herbicide stabilizers. For further details, see Product Uses.
- Because DPM is formulated into a broad range of products, consumer contact is possible. Workplace exposure is also possible. For further details, see Exposure Potential.
- Eye contact with DPM may cause slight temporary irritation, although corneal injury is unlikely. Prolonged skin contact is not likely to cause significant irritation; however, prolonged contact with very large amounts may cause drowsiness. Excessive inhalation may cause irritation to the upper respiratory tract along with possible anesthetic or narcotic effects. The oral toxicity is very low. For further details, see Health Information.
- DPM is stable under recommended storage conditions. DPM is combustible, and flammable vapors can be released at elevated temperatures. Avoid static discharge. DPM is incompatible with oxidizing materials, and contact should be avoided. For further details, see Physical Hazard Information.
Manufacture of Product

- **Capacity** – Western Europe is the largest producer and consumer of propylene oxide-based glycol ethers. The Dow Chemical Company (“Dow”) produces propylene oxide-based glycol ethers in the United States at facilities in Plaquemine, Louisiana and Seadrift, Texas in Europe in Stade, Germany, and in China at Zhangjiagang Ltd.

- **Process** – DPM is produced by the reaction of propylene oxide with methanol using a catalyst as shown below.

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  2 \text{H}_2\text{C}-\text{C} = \text{CH}_3 + \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{O}-\text{CH}_2\text{CHO}-\text{CH}_2\text{CHOH} \]

  Propylene oxide  Methanol  Dipropylene glycol methyl ether

Product Description

Dipropylene glycol monomethyl ether is a clear, colorless, combustible liquid with a slight ether odor. It is completely soluble in water and has moderate volatility. DPM is a propylene oxide-based or P-series glycol ether. DOWANOL™ DPM Glycol Ether contains min. 99.0% dipropylene glycol monomethyl ether.

Dow manufactures and markets DPM and other P-series glycol ethers under the trade name DOWANOL™.

Product Uses

The main commercial uses for DPM are:

- **Solvents** – for paints, varnishes, inks, strippers, and degreasers
- **Coalescing agents** – for water-based paints and inks – promotes polymer fusion during the drying process
- **Coatings** – for automotive, architectural, industrial maintenance, wood and coil coatings, and metal finishing
- **Chemical intermediates** – for the manufacture of dipropylene glycol monomethyl ether acetate (DPMA)
- **Chemical additives** – for the oil production and drilling industry

DPM is formulated into a wide variety of household and commercial products including:

- Cleaning products – glass, surface, paint brush, all-purpose, sanitary/disinfectant, and carpet cleaners
- Ceiling and wall paints
- Cosmetics – solvent and coupler with emollient properties and product stabilizer
- Floor polish
- Industrial degreasers
- Aluminum polishers/brighteners
- Leather and textile dyes
- Rust removers
- Pesticides – as a stabilizer

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Exposure Potential

DPM is used in the production of industrial and consumer products. Based on its uses, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a DPM manufacturing facility or in the various industrial or manufacturing facilities that use DPM. Those working with DPM in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. The primary potentials for occupational exposure to DPM are skin contact or vapor inhalation. Each manufacturing facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to products containing DPM** – DPM is not marketed for direct consumer use, but it is used in household cleaning formulations, cosmetics, paints, and other products available to consumers. Products formulated with DPM generally contain 1 to 10%, although some products may have levels as high as 50%. See Health Information.

- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil or surface and ground water. Isolate the area. For small spills, DPM should be absorbed with sand or other noncombustible absorbent material. Collect the material in suitable and properly labeled open containers. See Environmental Information, Health Information, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, the material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Use an approved air-purifying respirator if atmospheric levels are above exposure guidelines. Eliminate all sources of ignition immediately. In case of fire, keep people away and deny any unnecessary entry. Use of a direct water stream may spread fire. Wear positive-pressure, self-contained breathing apparatus (SCBA) or fight fire from a safe distance. Use water fog or fine spray, or carbon-dioxide, dry-chemical, or foam fire extinguishers. Follow emergency procedures carefully. See Environmental Information, Health Information, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.
Environmental Information

DPM is practically nontoxic to aquatic organisms on an acute basis. The bioconcentration (accumulation in the food chain) potential of DPM is low, and it is readily biodegradable.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information

DPM is stable under recommended storage conditions. DPM is a combustible liquid, and flammable vapors can be released at elevated temperatures. Avoid static discharge or other sources of ignition. DPM is incompatible with oxidizing materials, and contact should be avoided.

During a fire, smoke may contain the original material in addition to unidentified toxic or irritating combustion products such as carbon monoxide and carbon dioxide. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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 DPM. 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

- Safety Data Sheet (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (http://www.dow.com/oxysolvents/contact/index.htm)
- DOWANOL™ DPM Technical Data Sheet, The Dow Chemical Company, Form No. 110-00618-0812, August 2012.

For more business information about DPM, visit Dow’s Oxygenated Solvents web site. (http://www.dow.com/oxysolvents/)

References

2 DOWANOL DPM Product Information Datasheet, The Dow Chemical Company.

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NOTICES:

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Form No. 233-00468-MM-1115X