Product Safety Assessment

DOWANOL™ TPM Glycol Ether [Tripropylene Glycol Methyl Ether]

Select a Topic:

Names

- CAS No. 25498-49-1 (isomer mix)
- Tripropylene glycol methyl ether
- Methyltripropylene glycol (TPM)
- DOWANOL™ TPM Glycol Ether
- EC No. 247-045-4
- [2-(2-Methoxymethylethoxy)methylethoxy]-propanol
- [2-(2-(Methoxypropoxy)propoxy]propanol
- [1-[2-Methoxy-1-propoxy)-1-propoxy]-2-propanol

Product Overview

- Tripropylene glycol methyl ether (TPM) is a colorless liquid with an ether-like odor. TPM evaporates slowly and mixes well with water. The Dow Chemical Company ("Dow") markets TPM and other propylene oxide-based glycol ethers under the trade name DOWANOL Glycol Ethers.[1] For further details, see Product Description.
- TPM glycol ether is a solvent and coupling agent. TPM formulations are used for the following applications: rust, paint, and varnish removers; stamp-pad inks; ball-point and felt-tip writing pen inks; hard-surface cleaners; and penetrating oils.[2] For further details, see Product Uses.
- Because TPM is formulated into a broad range of products, consumer contact is possible. Workplace exposure is also possible.[1] For further details, see Exposure Potential.
- Eye contact with TPM may cause slight temporary irritation, although corneal injury is unlikely. Prolonged skin contact is not likely to cause significant irritation or result in absorption of harmful amounts. Prolonged or repeated exposure to very large amounts may cause dizziness or drowsiness. No adverse health effects are anticipated from a single inhalation of TPM vapor.[1] For further details, see Health Information.
- TPM is readily biodegradable, unlikely to accumulate in the food chain, and is practically non-toxic to fish and other aquatic organisms.
- TPM is stable under recommended storage conditions. TPM is incompatible with strong acids, strong bases, and strong oxidizers, and contact should be avoided.[1] For further details, see Physical Hazard Information.

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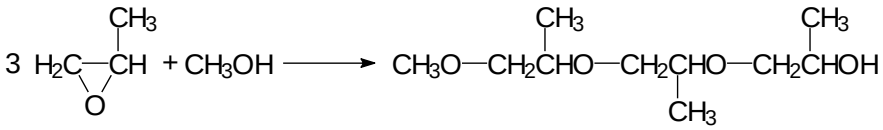
Manufacture of Product[3]

- **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 –** TPM is manufactured by reacting propylene oxide with methanol as shown below.



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Product Description[4,1,5]

Tripropylene glycol methyl ether (TPM) is a colorless liquid with an ether odor. It evaporates slowly and is hydrophilic (mixes well with water). TPM Glycol Ether contains min. 97.5% tripropylene glycol monomethyl ether. Dow markets TPM and other P-series glycol ethers under the trade name DOWANOL™ Glycol Ethers.

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Product Uses[2,3,5,6,]

TPM is used for the following industrial and residential applications:

- **Cleaners –** as a coupling agent or solvent for household and industrial cleaners such as all oven cleaner, and for rust, paint, and varnish removers
- **Coatings –** as a solvent for coil and wood coatings
- **Inks –** as a solvent for ballpoint, felt-tipped pens, and inkpads (to prevent drying)

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Exposure Potential

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

- **Workplace exposure**[1,5] – Exposure can occur either in a TPM manufacturing facility or in the various industrial or manufacturing facilities that use TPM. Those working with TPM 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 unnecessary exposure. See Health Information.
- **Consumer exposure to products containing TPM**[5] – Dow does not sell TPM for direct consumer use, however, consumers can be exposed through the use of home-cleaning products, paint removers, ink pens, or other products containing TPM. The typical TPM concentration in cleaners is 2 to 50%. See Health Information.
- **Environmental releases**[1] – TPM may be released to air by slowly evaporating from cleaners or other products containing it. However, once TPM is introduced to water, the compound will tend to remain dissolved because it is completely soluble in water. TPM is readily biodegradable, and the compound will be removed by sewage treatment plants.
- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, contain the spilled material if possible. Ventilate the area. Pump the material into suitable and properly labeled containers using appropriate safety equipment.

- **In case of fire** – Keep people away and deny unnecessary entry. Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire-fighting clothing or fight the fire from a safe distance. *Do not use* a direct water stream; it may spread the fire. Use water fog or fine spray, carbon-dioxide or dry-chemical extinguishers, or foam. Use water spray to cool containers exposed to the fire and the zone affected by the fire until fire is out and the danger of reignition has passed. Follow all emergency procedures carefully. See Environmental Information, Health Information, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

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Health Information[1]

Eye contact with TPM may cause slight temporary irritation, although corneal injury is unlikely. Prolonged skin contact is not likely to cause significant irritation or result in absorption of harmful amounts. Prolonged or repeated exposure to very large amounts may cause dizziness or drowsiness. No adverse health effects are anticipated from a single inhalation of TPM vapor.

TPM has low toxicity if swallowed. Swallowing small amounts incidental to normal handling is unlikely to cause injury. However, swallowing larger amounts may cause injury.

Repeated skin exposure to TPM may cause anesthetic or narcotic effects. In laboratory animal testing, exposure to TPM is not anticipated to cause cancer or birth defects. Exposure to high vapor concentrations of a similar material caused reproductive effects but only at doses toxic to the mother. Genetic toxicity studies were negative.

For more information, see the relevant Safety Data Sheet.

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Environmental Information[1]

TPM has a low volatility, and may evaporate slowly from products containing it. However, because it is completely soluble in water, once introduced, it has a tendency to remain in water. It has minimal tendency to bind to soil or sediment.

TPM is unlikely to persist in the environment. TPM is readily biodegradable, which suggests the chemical will be rapidly and completely removed from water and soil environments, including biological wastewater treatment plants.

TPM 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.

For more information, see the relevant Safety Data Sheet.

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Physical Hazard Information[1]

TPM is stable under recommended storage conditions. Store this material in carbon steel, stainless steel, or phenolic-lined steel drums. Do not store in aluminum, copper, galvanized steel, galvanized iron, Viton rubber, neoprene rubber, nitrile rubber, or natural rubber. TPM can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure build-up in closed systems. Decomposition products depend on temperature, air supply, and the presence of other materials, but may include aldehydes, ketones, organic acids, and other compounds.

TPM is incompatible with strong acids, strong bases, and strong oxidizers, and contact should be avoided.

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

For more information, see the relevant Safety Data Sheet.

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of TPM. 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.

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Additional Information

- Safety Data Sheet (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (http://www.dow.com/oxysolvents/contact/index.htm)
- *DOWANOL™ TPM Glycol Ether Technical Data Sheet,* The Dow Chemical Company.
- "Propylene Glycol Ethers," *SIDS Initial Assessment Report for 17 SIAM,* Organisation for Economic Co-operation and Development, Arona, Italy, November 11–14, 2003 (http://www.inchem.org/documents/sids/sids/pges.pdf)
- "Glycol Ethers," *Marketing Research Report: Chemical Economics Handbook*, SRI Consulting, July 2004

For more business information about TPM, visit Dow's Oxygenated Solvents web site. (http://www.dow.com/oxysolvents/index.htm or www.dowanol.com)

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References

[1] *DOWANOL™ TPM Glycol Ether Material Safety Data Sheet*, The Dow Chemical Company.
[2] *DOWANOL TPM Glycol Ether Product Information,* The Dow Chemical Company.
[3] Chinn, Henry, "Glycol Ethers," *Marketing Research Report: Chemical Economics Handbook*, SRI Consulting, July 2004.
[4] Dow Oxygenated Solvents website – P-Series Glycol Ethers: (http://www.dow.com/oxysolvents/prod/pseries.htm).
[5] "Propylene Glycol Ethers," *SIDS Initial Assessment Report for 17 SIAM,* Organisation for Economic Co-operation and Development, November 11–14, 2003, Arona, Italy, page 8.
[6] Dow Oxygenated Solvents website – Applications Center: (http://www.dow.com/oxysolvents/app/index.htm).

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NOTICES:

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