Product Safety Assessment

**DOWANOL™ PnP Glycol Ether [Propylene Glycol n-Propyl Ether]**

Select a Topic:
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**Names**¹
- CAS No. 1569-01-3
- EC No. 216-372-4
- Propylene glycol n-propyl ether
- 1-Propanol, 1-propoxy
- n-Propanol
- Monopropylene glycol n-propyl ether
- 2-Propanol, 1-propoxy
- DOWANOL™ PnP Glycol Ether
- 1-Propanol-2-hydroxypropane
- 2-Propanol-1-methylethanol
- 1-Propanol-2-ol
- PnP

**Product Overview**
- Propylene glycol n-propyl ether (PnP) is a colorless liquid with an ether-like odor. PnP evaporates quickly and mixes easily with water. The Dow Chemical Company (“Dow”) markets glycol ethers under the trade name DOWANOL™ Glycol Ethers.² For further details, see **Product Description**.
- PnP is mainly used in household and industrial cleaning formulations, such as glass and all-purpose cleaners. It is also used as a grease and paint remover and as a solvent to regulate coalescence.¹,³ For further details, see **Product Uses**.
- Because PnP is formulated into household products, consumer contact is possible. Workplace exposure is also possible.² For further details, see **Exposure Potential**.
- Eye contact with PnP liquid or vapor may cause moderate irritation with moderate corneal injury. Prolonged skin contact may cause slight irritation with local redness, but is not likely to result in absorption of harmful amounts. Repeated exposure may cause more significant irritation, drying, or flaking of the skin, or a burn. Briefly inhaling PnP (minutes) is unlikely to cause adverse effects. Excessive exposure may cause irritation to the upper respiratory tract (nose and throat), and anesthetic or narcotic effects.² For further details, see **Health Information**.
- PnP is readily biodegradable, unlikely to accumulate in the food chain, and is practically nontoxic to fish and aquatic organisms.² For further details, see **Environmental Information**.
- PnP, both liquid and vapor, is flammable. Store away from heat, sparks, and flame. PnP is stable under recommended storage conditions. PnP is incompatible with strong acids, strong bases, and strong oxidizers and contact should be avoided.² For further details, see **Physical Hazard Information**.

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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** – PnP is produced by reacting propylene oxide with n-propanol as shown below.

\[
\text{n-Propyl alcohol} + \text{Propylene oxide} \rightarrow \text{Propylene glycol n-propyl ether}
\]

Product Description

Propylene glycol n-propyl ether (PnP) is a colorless liquid with an ether-like odor. It evaporates quickly and is completely soluble (mixes easily) in water. PnP is a propylene oxide-based, or P-series, glycol ether. PnP glycol ether contains min. 95.0% propylene glycol n-propyl ether. Dow manufactures PnP and other Pseries glycol ethers under the trade name DOWANOL™ Glycol Ethers.

Product Uses

PnP is used for industrial and residential applications including:

- Cleaners
- Paint and Coatings
- Inks

Exposure Potential

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

- **Workplace exposure** – Exposure can occur either in a PnP manufacturing facility or in the various industrial or manufacturing facilities that use PnP. Those working with PnP 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 and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to products containing PnP** – Dow does not sell PnP for direct consumer use, but it is used in household cleaning formulations, paints, and other products. Household products containing PnP generally contain levels of 1 to 10%. See Health Information.

- **Environmental releases** – PnP may be released to air by evaporation from coatings or other products containing it. However, once PnP is introduced to water, the compound will tend to remain dissolved because it is highly soluble in water. PnP is readily biodegradable, and the compound will be removed by sewage treatment plants.

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- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, isolate the area. PnP can pose a vapor explosion hazard. Eliminate all sources of ignition and ground and bond all containers and handling equipment. Contain spilled material if possible. Pump the contained material into suitable and properly labeled containers. Use appropriate safety equipment.

- **In case of fire** – Keep people away and deny any unnecessary entry. Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire-fighting clothing or fight the fire from a safe distance. Consider the use of unmanned hose holders or monitor nozzles. 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 fire and within the zone affected by the fire until fire is out and danger of reignition is passed. Follow emergency procedures carefully. See Environmental Information, Health Information, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

Eye contact with PnP liquid or vapor may cause moderate eye irritation and moderate corneal injury. Prolonged skin contact may cause slight irritation with local redness, but is unlikely to result in absorption of harmful amounts. Repeated exposure may cause drying and flaking of the skin, significant irritation, or a burn. Brief inhalation of PnP (minutes) is not likely to cause adverse effects. Excessive inhalation may cause irritation to the nose and throat. Symptoms of excessive exposure may cause Anesthetic or narcotic effects.

PnP has low toxicity if swallowed. Swallowing small amounts incidental to normal handling is not likely to cause injury. Swallowing larger amounts may cause injury.

Repeated exposure may cause central nervous system and eye effects. Birth defects were not observed in laboratory animals. Genetic toxicity studies were negative.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

PnP is moderately volatile, and will evaporate from products which contain it. However, because PnP 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.

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

PnP 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.

**Physical Hazard Information**

PnP is stable under recommended storage conditions. Store in carbon steel, stainless steel, or phenolic-lined steel drums. Do not store in aluminum, copper, galvanized iron, or galvanized steel.
PnP can decompose at elevated temperatures, creating pressure build-up in closed systems. Decomposition products depend on temperature, air supply, and the presence of other materials and may include aldehydes, ketones, and other materials.

PnP is incompatible with strong acids, strong bases, and strong oxidizers. PnP contact with these materials should be avoided.

PnP, both liquid and vapors, is flammable. Store away from heat, sparks, and flame. During a fire, containers may rupture due to gas generation. PnP vapors are combustible. Smoke may contain the original material in addition to unidentified toxic or irritating compounds, which may include and are not limited to carbon monoxide and carbon dioxide.

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 PnP. 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™ PnP Glycol Ether Technical Data Sheet, The Dow Chemical Company, Form No. 110-00589-0812, August 2012

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

1 “Chemical Profiles: Propylene Glycol Mono-n-Propyl Ether,” CHEMINFO Database, Canadian Centre for Occupational Health and Safety, CHEMINFO Record No. 178.

2 DOWANOL™ PNP Glycol Ether Material Safety Data Sheet, The Dow Chemical Company.

3 DOWANOL PnP Glycol Ether Product Information, The Dow Chemical Company.


8 Estimates by The Dow Chemical Company.

NOTICES:

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment 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 relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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