Product Safety Assessment

**DOWANOL™ DPnB Glycol Ether [Dipropylene Glycol n-Butyl Ether]**

Select a Topic:
- Names
- Product Overview
- Manufacture of Product
- Product Description
- Product Uses
- Exposure Potential
- Health Information
- Environmental Information
- Physical Hazard Information
- Regulatory Information
- Additional Information
- References

**Names**
- CAS No. 29911-28-2
- EC No. 249-951-5
- Dipropylene glycol n-butyl ether
- DPnB
- 1-(2-Butoxy-1-methylethoxy)propan-2-ol
- 1-(2-Butoxy-1-propoxy)-2-propanol
- N-Butoxy-propoxy-propanol
- 1-(2-Butoxy-1-propoxy)propan-2-ol
- DOWANOL™ DPnB Glycol Ether

**Product Overview**
- Dipropylene glycol n-butyl ether (DPnB) is a colorless liquid with an ether-like odor. DPnB evaporates slowly and doesn't mix well with water. The Dow Chemical Company ("Dow") manufactures DPnB and other propylene oxide-based glycol ethers under the trade name DOWANOL™ Glycol Ethers.¹ For further details, see Product Description.
- DPnB is used in household and industrial cleaning formulations. It is also used as a solvent, chemical intermediate, coalescing agent, and coupling agent.² For further details, see Product Uses.
- DPnB is formulated into a broad range of products, making consumer contact possible. Exposure to DPnB could also occur in the workplace.³ For further details, see Exposure Potential.
- Eye contact with liquid DPnB may cause slight irritation and slight corneal injury. Prolonged skin contact may cause slight irritation and local redness, but is not likely to result in absorption of harmful amounts. Prolonged inhalation of DPnB is not likely to cause adverse effects.¹ For further details, see Health Information.
- DPnB is stable under recommended storage conditions. DPnB is incompatible with strong acids, strong bases, and strong oxidizers, Contact should be avoided.¹ For further details, see Physical Hazard Information.

**Back to top**

**Manufacture of Product³**
- 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 ether.
Product Safety Assessment: DOWANOL™ DPnB Glycol Ether

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** – Propylene glycol ethers are manufactured in closed, continuous systems. DPnB is manufactured by reacting propylene oxide with n-butyl alcohol as shown below.

  \[
  \text{C}_4\text{H}_9\text{OH} + 2\text{H}_2\text{C} = \text{CH} \quad \text{CH}_3 \quad \text{CH}_3 \quad \rightarrow \quad \text{C}_4\text{H}_9\text{O-CH}_2\text{CHO-CH}_2\text{CH}_2\text{OH}
  \]

  n-Butyl alcohol  Propylene oxide  Dipropylene glycol n-butyl ether

---

Product Description

Dipropylene glycol n-butyl ether (DPnB) is a colorless liquid with an ether-like odor. It evaporates slowly and does not mix well with water. DPnB is a propylene oxide-based, or P-series, glycol ether. DPnB Glycol Ether contains min. 98.5% dipropylene glycol n-butyl ether. Dow manufactures DPnB and other P-series glycol ethers under the trade name DOWANOL™ Glycol Ethers.

---

Product Uses

DPnB is widely used for industrial and residential applications, such as:

- **Cleaning formulations** – acts as a coupling agent and solvent in household and industrial cleaners such as all-purpose, kitchen, and bathroom cleaners; grease and paint removers; hard-surface cleaners; and laundry pre-wash stain removers
- **Surface coatings** – architectural, automotive refinishes and topcoats, and industrial maintenance coatings for corrosion control
- **Coalescing agent** – latex coatings
- **Chemical intermediate** – for the production of epoxides, acid ester derivatives, solvents, and plasticizers
- **Coupling agent and solvent** – water-reducible and solvent-based coatings
- **Inks**
- **Cosmetics**

---

Exposure Potential

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

- **Workplace exposure** – Exposure can occur either in a DPnB manufacturing facility or in the various industrial or manufacturing facilities that use DPnB. Those working with DPnB 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 DPnB** – Dow does not sell DPnB for direct consumer use; however, consumers can be exposed through the use of home cleaning products, paint removers, or other products containing DPnB. The typical DPnB concentration in cleaners is 2 to 10%. See Health Information.
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, ditches, sewers, waterways, or groundwater. For small spills,
DPnB should be absorbed with sand or vermiculite. Collect the material in suitable and properly labeled 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, contain spilled material if possible. Pump 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. Consider the use of unmanned hose holders or monitor nozzles. Do not use a direct water stream (may spread fire). Use water fog or fine spray, carbon-dioxide or dry-chemical extinguishers, or foam. 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 liquid DPnB may cause slight irritation and corneal injury. Prolonged skin contact may cause slight irritation but is not likely to result in absorption of harmful amounts. Prolonged inhalation of DPnB is not likely to cause adverse effects. DPnB was not a skin sensitizer in animals or humans.

DPnB has low toxicity if swallowed. Swallowing small amounts incidental to normal handling is unlikely to cause injury. However, swallowing larger amounts may cause injury. Significant effects are not expected following acute or prolonged inhalation of vapor or aerosol exposures. DPnB does not cause fetal toxicity, birth defects or reproductive effects. Genetic toxicity studies were also negative.

For more information, see the relevant Safety Data Sheet.

### Environmental Information

DPnB is not likely to accumulate in the food chain (bioconcentration potential is low) and is readily biodegradable. DPnB is practically nontoxic to aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

### Physical Hazard Information

DPnB is stable under recommended storage conditions. It should be stored in carbon steel, stainless steel, or phenolic-lined steel drums. Do not store in aluminum, copper, galvanized steel, or galvanized iron. DPnB can oxidize (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 can include aldehydes, ketones, and organic acids.

DPnB is incompatible with strong acids, strong bases, and strong oxidizers. Avoid contact with these materials.

During a fire, smoke may contain the original material in addition to varying compositions of toxic or irritating combustion products. Combustion products may include and are not limited to 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 DPnB. 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.

*Back to top*

**Additional Information**

- Contact Us ([http://www.dow.com/oxysolvents/contact/index.htm](http://www.dow.com/oxysolvents/contact/index.htm))
- **DOWANOL™ DPnB Technical Data Sheet**, The Dow Chemical Company, Form No. 110-00620-0812, August 2012.

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

*Back to top*

**References**

1. **DOWANOL™ DPnB Glycol Ether High Purity Grade Material Safety Data Sheet**, The Dow Chemical Company.
7. Estimates by The Dow Chemical Company.

*Back to top*
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.

The information herein is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Dow be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information herein or the product to which that information refers.

Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and Dow makes no representation or warranty, express or implied, that the use thereof will not infringe any patent.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Dow makes no commitment to update or correct any information that appears on the Internet or on its World-Wide Web server. The information contained in this document is supplemental to the Internet Disclaimer, http://www.dow.com/en-us/terms-of-use/

Back to top