



Safety Data Sheet

The Dow Chemical Company

Product Name: DOWANOL* PNP GLYCOL ETHER

Revision Date: 2007/03/12

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The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Identification of the substance/preparation and of the company/undertaking

Product Name

DOWANOL* PNP GLYCOL ETHER

Use of the substance/preparation

Industrial solvent for cleaner and coating formulations.

COMPANY IDENTIFICATION

The Dow Chemical Company
2030 Willard H. Dow Center
48674 Midland, MI
USA

Customer Information Number:

800-258-2436

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

989-636-4400

Local Emergency Contact:

00 44 155 37 61 251

2. Composition/information on ingredients

| Component | Amount | Classification: | CAS # | EC # |
|----------------------|----------|-----------------|-----------|-----------|
| 1-Propoxy-2-propanol | > 99.0 % | R10 | 1569-01-3 | 216-372-4 |

See Section 16 for full text of R-phrases.

3. Hazards Identification

Flammable.

4. First-aid measures

* Indicates a Trademark

Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

Skin Contact: Wash skin with plenty of water.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Notes to Physician: Maintain adequate ventilation and oxygenation of the patient. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Medical Conditions Aggravated by Exposure: Skin contact may aggravate preexisting dermatitis.

5. Fire Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. Isolate area. Refer to Section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Other Precautions: Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage

Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage Period:, Bulk 6 Months

Storage Period:, Steel drums. 24 Months

8. Exposure Controls / Personal Protection

Exposure Limits

None established

Personal Protection

Eye/Face Protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

| | |
|---|---|
| Physical State | Liquid |
| Color | Colorless |
| Odor | Ether |
| Flash Point - Closed Cup | 48 °C <i>Setaflash Closed Cup ASTM D3278</i> |
| Flammable Limits In Air | Lower: 1.10 %(V) <i>Literature</i> Upper: No test data available |
| Autoignition Temperature | 252 °C <i>Literature</i> |
| Vapor Pressure | 2 kPa @ 20 °C <i>Literature</i> |
| Boiling Point (760 mmHg) | 149 °C <i>Literature</i> . |
| Vapor Density (air = 1) | No test data available |
| Specific Gravity (H ₂ O = 1) | 0.883 25 °C/25 °C <i>ASTM D891</i> |
| Freezing Point | -80 °C <i>Literature</i> |
| Melting Point | No test data available |
| Solubility in Water (by weight) | 100 % <i>Literature</i> miscible in all proportions |
| pH | No test data available |
| Octanol/Water Partition Coefficient | 0.49 <i>Estimated</i> |
| Dynamic Viscosity | 2.4 mPa.s @ 25 °C <i>Literature</i> |

10. Stability and Reactivity

Stability/Instability

Stable under recommended storage conditions. See Storage, Section 7.

Conditions to Avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. Toxicological Information

Acute Toxicity

Ingestion

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Observations in animals include: Anesthetic or narcotic effects.

LD50, Rat 2,000 - 4,350 mg/kg

Eye Contact

May cause moderate eye irritation. May cause moderate corneal injury. Vapor may cause corneal injury.

Skin Contact

Prolonged contact may cause slight skin irritation with local redness. Repeated exposure may cause irritation, even a burn. May cause more severe response if skin is abraded (scratched or cut). May cause drying and flaking of the skin.

Skin Absorption

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Observations in animals include: Anesthetic or narcotic effects.

LD50, Rabbit 2,800 - 4,350 mg/kg

Inhalation

Brief exposure (minutes) is not likely to cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Observations in animals include: Anesthetic or narcotic effects.

Repeated Dose Toxicity

In animals, effects have been reported on the following organs: Kidney. Liver. Eye.

Developmental Toxicity

Did not cause birth defects in laboratory animals. Has been toxic to the fetus in lab animals at doses toxic to the mother.

Genetic Toxicology

In vitro genetic toxicity studies were negative.

12. Ecological Information

CHEMICAL FATE

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).

Henry's Law Constant (H): 3.44E-7 atm*m3/mole; 25 °C Estimated

Partition coefficient, n-octanol/water (log Pow): 0.49 Estimated

Partition coefficient, soil organic carbon/water (Koc): 1 - 1.9 Estimated

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Indirect Photodegradation with OH Radicals

| Rate Constant | Atmospheric Half-life | Method |
|----------------|-----------------------|-----------|
| 2.61E-11 cm3/s | 4.9 h | Estimated |

OECD Biodegradation Tests:

| Biodegradation | Exposure Time | Method |
|----------------|---------------|----------------|
| 91.5 % | 28 d | OECD 301A Test |

Biological oxygen demand (BOD):

| BOD 5 | BOD 10 | BOD 20 | BOD 28 |
|---------|-----------|-----------|--------|
| 4 - 9 % | 29 - 50 % | 62 - 84 % | |

Theoretical Oxygen Demand: 2.30 mg/mg

ECOTOXICITY

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50 greater than 100 mg/L in most sensitive species).

Fish Acute & Prolonged Toxicity

LC50, fathead minnow (Pimephales promelas), static, 96 h: 3,400 mg/l

LC50, rainbow trout (Oncorhynchus mykiss), 96 h: > 100 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, water flea Daphnia magna, static, 48 h: 3,600 mg/l

EC50, water flea Daphnia magna, 48 h, immobilization: > 100 mg/l

Aquatic Plant Toxicity

EC50, green alga Selenastrum capricornutum, biomass growth inhibition, 4 d: 1,466 mg/l

Toxicity to Micro-organisms

EC50; bacteria, Growth inhibition (cell density reduction), 16 h: 3,800 mg/l

13. Disposal Considerations

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 91/689/EEC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

14. Transport Information

ROAD & RAIL

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: 1-Propoxy-2-propanol

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Classification: F1

Kemler Code: 30

Tremcard Number: 30GF1-III

Special prov. 640E / Special prov. 640E

OCEAN

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: 1-Propoxy-2-propanol

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

EMS Number: F-E, S-E

Marine pollutant.: No

AIR

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: 1-Propoxy-2-propanol

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Cargo Packing Instruction: 310

Passenger Packing Instruction: 309

INLAND WATERWAYS

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: 1-Propoxy-2-propanol

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Classification: F1

Kemler Code: 30

Tremcard Number: 30GF1-III

Special prov. 640E / Special prov. 640E

15. Regulatory Information

European Inventory of Existing Commercial Chemical Substances (EINECS)

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

EC Classification and User Label Information

Risk Phrases :

R10 - Flammable.

Chemical Name 1-Propoxy-2-propanol
(EC # 216-372-4)

16. Other Information**Risk-phrases in Section 2**

R10 Flammable.

Product Literature

Additional information on this product may be obtained by calling your Dow Chemical Company sales or customer service contact. Ask for a product brochure.

Revision

Identification Number: 41854 / 1001 / Issue Date 2007/03/12 / Version: 3.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

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