Glycerine-Propoxylated-Ethoxylated Polyol


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Names
- CAS No. 9082-00-2
- Glycerol, ethoxylated and propoxylated
- Glycerine-propoxylated-ethoxylated polyether polyol

Various VORANOL™, VORALUX™, and SPECFLEX™ polyols, including, for example:
- VORANOL CP 3322 polyol
- VORANOL CP 1421 polyol
- VORANOL CP 3001 polyol
- VORANOL CP 3040 polyol
- VORANOL CP 3355 polyol
- VORANOL CP 3592 polyol
- VORANOL CP 4711 polyol
- VORANOL CP 4755 polyol
- VORANOL CP 6001 polyol
- VORANOL 3010 polyol
- VORANOL 3011 polyol
- VORANOL 3512A polyol
- VORANOL 6150 polyol
- VORANOL 5815 polyol
- VORANOL 9815A polyol
- VORANOL 2471 polyol
- VORANOL 3180 polyol
- VORANOL 3595 polyol
- VORANOL 4755 polyol
- SPECFLEX NC 654 polyol

Product Overview
- Glycerine-propoxylated-ethoxylated polyols are clear liquids with a slightly sweet odor. These products belong to a category of materials called polyether polyols and are produced by reacting glycerine with propylene oxide and ethylene oxide. The Dow Chemical Company and its global affiliates market a variety of these polyols of different molecular weights and properties under the trade name VORANOL™ polyols, VORALUX™ polyols, and SPECFLEX™ polyols. For further details, see Product Description.
- Glycerine-propoxylated-ethoxylated polyols are primarily used as chemical building blocks in the manufacture of flexible, standard, and high-resilience polyurethane foams. For further details, see Product Uses.
- Exposure can occur either in facilities that manufacture these polyols or in the various industrial or manufacturing facilities that use these products. Glycerine-propoxylated-ethoxylated polyols are not sold directly to consumers and are not expected to represent a risk to consumers. For further details, see Exposure Potential.
Product Safety Assessment: Glycerine-Propoxylated-Ethoxylated Polyol

- Eye contact may cause slight, temporary irritation and corneal injury. Prolonged skin exposure is not likely to cause significant irritation or result in absorption of harmful amounts. Exposure to vapor is expected to be minimal due to the low volatility of these products. These products have low toxicity if swallowed. For further details, see Health Information.

- Glycerine-propoxylated-ethoxylated polyols are expected to biodegrade slowly in the environment. They are nonvolatile and water soluble, so environmental releases would tend to migrate toward or remain in water. These polyols would not persist in the environment and would be removed by biological wastewater-treatment facilities. The bioconcentration potential of these products is low. They are practically nontoxic to aquatic organisms. For further details, see Environmental Information.

- Glycerine-propoxylated-ethoxylated polyols are stable under recommended storage and normal use conditions. Avoid contact with oxidizing materials, strong acids, and strong bases. For further details, see Physical Hazard Information.

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Manufacture of Product

- **Capacity** – The Dow Chemical Company and its global affiliates are major producers of propylene oxide, one of the materials used to manufacture polyether polyols, and is also the world's largest producer of polyether polyols. In 2011, Dow's global capacity to produce polyether polyols was 1,494,000 metric tonnes (3.3 billion pounds) of polyether polyols. Dow polyols are manufactured at facilities in Terneuzen, The Netherlands; Tarragona, Spain; Tertre, Belgium; Cartagena, Columbia; Guaruja, Brazil; San Lorenzo, Argentina; Freeport, Texas, United States; Altona, Australia; Map Ta Phut, Thailand; Nankang, Taiwan; and Ningbo, People’s Republic of China.

- **Process** – Glycerine is reacted with propylene oxide and ethylene oxide as shown in the reaction below. Glycerine acts as the initiator. The oxide can be added as a mix or capped option.

![Chemical Reaction](image)

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Product Description

Glycerine-propoxylated-ethoxylated polyols are clear liquids with a slightly sweet odor. These products are hygroscopic (attract water from the atmosphere and environment). The Dow Chemical Company and its global affiliates market these products under the trade names VORANOL™ polyols, VORALUX™ polyols, and SPECFLEX™ polyols.

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Product Uses

Glycerine-propoxylated-ethoxylated polyols are reacted with isocyanates to produce polyurethane products. Primary uses include:

- High-resilience, flexible slabstock used in the automotive industry for seating, trim, and noise reduction and in the furniture industry for high-quality cushioning
- Molded polyurethane foam

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U.S. Uses for Polyether Polyols in Urethanes (2011)

- Rigid foam 8%
- Nonfoam 20%
- Flexible foam 46%
- Other Products 26%

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Exposure Potential

- Glycerine-propoxylated-ethoxylated polyols are used in the production of industrial and consumer products. Based on the uses for this product, the public could be exposed through:
  - Workplace exposure – Exposure can occur either in facilities that manufacture glycerine-propoxylated-ethoxylated polyols or in the various industrial or manufacturing facilities that use these products. They are produced, distributed, stored, and consumed in closed systems. Those working these polyols 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 exposure. See Health Information.
  - Consumer exposure to products containing glycerine-propoxylated-ethoxylated polyols – These polyols are not sold directly to consumers; however, goods used by consumers may incorporate these products in cured form. Contact with the cured polyurethane product would not be expected to represent a risk. See Health Information.
  - Environmental releases – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, or groundwater. Small spills should be absorbed with dirt, sand, or sawdust. Material spilled on concrete and metal surfaces may cause a slipping hazard. These products are nonvolatile and water soluble, so environmental releases would tend to migrate toward or remain in water. They would not persist in the environment and would be removed by biological wastewater-treatment facilities. The bioconcentration potential of these products is low. These products are practically nontoxic to aquatic organisms. See Environmental, Health, 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. An approved respirator is recommended for emergency work. See Environmental, Health, and Physical Hazard Information.
  - In case of fire – Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. Alcohol-resistant foams are preferred. Use of a direct water stream may spread the fire. Containers may rupture from gas generation during a fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Health Information

Health information for these polyols is summarized on the relevant Safety Data Sheet. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific health information. These products may also contain minor components or additives that have additional health risks. An overview of health information for these products is below.

Eye contact – Contact may cause slight, temporary irritation and slight, temporary corneal injury.

Skin contact – Prolonged contact is not likely to cause significant irritation and is not likely to result in absorption of harmful amounts. A more severe response may be expected if skin is abraded (scratched or cut).

Inhalation – Exposure to vapor is expected to be minimal due to the low volatility of these products. Vapor from heated products or mist may cause respiratory irritation.

Ingestion – Lower molecular weight products have low toxicity if swallowed. Higher molecular weight products (MW range approximately 700-1000) may be harmful if swallowed.

Repeated exposure – Based on available data, repeated exposures are not expected to cause significant adverse effects.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.
Environmental Information

Glycerine-propoxylated-ethoxylated polyols are expected to biodegrade slowly in the environment. They are nonvolatile and water soluble, so environmental releases would tend to migrate toward or remain in water. They would not persist in the environment and would be removed by biological wastewater-treatment facilities. The bioconcentration potential (tendency to accumulate in the food chain) for these products is low.

These products are practically nontoxic to aquatic organisms (LC50/EC50 >1,000 mg/L for the most sensitive species tested).

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Physical Hazard Information

Glycerine-propoxylated-ethoxylated polyols are stable under recommended storage and normal use conditions. These products can oxidize at elevated temperatures leading to gas generation and possible pressure build-up. Avoid contact with oxidizing materials, strong acids, and strong bases. Avoid unintended contact with isocyanates. The reaction of polyols and isocyanates generates heat.

Spills of these products on hot, fibrous insulation may reduce the autoignition temperature, increasing the potential for spontaneous combustion.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of glycerine-propoxylated-ethoxylated polyols. 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

- Request the Safety Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/polyurethane/contact/index.htm)
- Technical Data Sheets (www.dow.com/polyurethane/products/)

For more business information about glycerine-propoxylated-ethoxylated polyols, visit the Dow Polyurethanes website at www.dow.com/polyurethane/.

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