Dow Propylene Glycol USP/EP

Your Security for Purity
Purity Plus

A very high dedication to consistent quality and purity governs the entire product supply process for Dow Propylene Glycol USP/EP.

**Purity Plus** describes Dow's dedication to pure excellence in propylene glycol:
- **Purity** means producing and handling Dow Propylene Glycol USP/EP according to the industry's most stringent standards.
- **Plus** refers to the support and confidence our customers have in Dow – with nearly 60 years of PG experience, global customer and technical support, excellent product stewardship and environment, health and safety practices.

**Quality**
- Highest industry purity at a minimum of 99.8%
- Exceeds USP monograph including non-detectable MEG and DEG (<0.008%)
- All plants are kosher certified; most are halal certified

**Supply Chain**
- Largest PG supply capacity globally
- Global reach
  - Five global manufacturing facilities
  - One of the world’s highest capacity PG plants in Stade, Germany
  - Only producer in North America with two plants in two different states
  - Only producer in South America
- Global terminal structure for supply reliability
- Product stewardship throughout our entire supply chain
- Marine, rail and truck capable

**Exceptional Solutions**
- Award-winning sustainable hydrogen peroxide to propylene oxide (HPPO) technology
  - iChemE and Presidential Green Chemistry Challenge Awards
- Global HPPO plants
- Regional support by knowledgeable sales, TS&D and CSR professionals
...Turn to the product that offers confidence and security. Dow Propylene Glycol USP/EP\(^1\) offers one of the highest purity propylene glycols available in the marketplace – with a specified purity of 99.8 percent or greater, non-detectable MEG/DEG\(^2\) contents, adherence to IPEC-PQG\(^3\) Good Manufacturing Practices for pharmaceutical excipients, and a two-year shelf life when stored according to Dow’s recommendations.\(^4\) Think of it as your security for purity.

The purity and versatility of Dow PG USP/EP allow it to be used as an ingredient in products subject to very stringent quality standards, including pharmaceuticals, foods, beverages, cosmetics, personal care products and animal feed.

But consistent high purity isn’t the only advantage of Dow PG USP/EP. Purity Plus symbolizes a commitment to quality and regulatory compliance at all levels of our global manufacturing and supply chain.

\(^{1}\)Dow PG USP/EP is tested against and complies with the specific requirements of current USP, EP and JP. It also meets, but is not tested against, Brazilian Pharmacopeia requirements. Dow’s stringent PG USP/EP global manufacturing standards offer the availability of the same consistently pure, high-quality PG USP/EP product around the world.

\(^{2}\)Monoethylene Glycol/Diethylene Glycol.

\(^{3}\)International Pharmaceutical Excipients Council/Pharmaceutical Quality Group.

\(^{4}\)When stored below 104 °F (40 °C) in closed containers, protected from UV light.
Pure Quality

Dow Propylene Glycol USP/EP follows the industry’s most rigorous quality-control processes – including adherence to Good Manufacturing Practices (GMP) based on guidelines from The Joint IPEC-PQG Good Manufacturing Practices Guide for Pharmaceutical Excipients. Dow’s commitment to GMP throughout the supply chain enables Dow PG USP/EP to be handled according to stringent requirements for consistent purity.

Dow PG USP/EP is a clear, colorless, practically odorless, slightly viscous, water-soluble and hygroscopic liquid with low vapor pressure. It is tested against and certified according to the specific requirements of the following standards:

- United States Pharmacopeia (USP)
- European Pharmacopeia (PhEur or EP)
- Japanese Pharmacopeia (JP)
- Food Chemicals Codex (FCC)
- All plants are kosher certified; most are halal certified

The global Sales Specification and Certificate of Analysis for Dow PG USP/EP list compliance to all items in these monographs and also additional specific Dow requirements.

Dow PG USP/EP also adheres to the following standards and guidelines:

- Guidelines for Handling and Distribution of Propylene Glycol USP/EP – European Chemical Industry Council (Cefic)
- European Single Assessment Document for Distributors, Appendix F&G – Cefic and the European Association of Chemical Distributors (FECC)
- Good Distribution Practices Guide for Pharmaceutical Excipients – IPEC
- Meets the requirements and standards of Brazilian Pharmacopeia (Farmacopeia Brasileira)

Dow’s stringent global manufacturing standards for Dow PG USP/EP enable the availability of the same consistently pure, high-quality product around the world.

A Closer Look at Quality, From Manufacturing Through Delivery

The entire product supply process for Dow PG USP/EP is designed and monitored for consistent quality and purity.

Manufacturing

- A team of GMP compliance experts has defined production and quality standards and GMP procedures for Dow PG USP/EP and regularly audits Dow’s facilities against IPEC-PQG GMP guidelines.
- All plants are ISO 9001-2008 certified and kosher certified, and most are halal certified.
- Manufactured to the highest purity standards in the United States (USP), Europe (EP), Japan (JP) and FCC.
- Trained personnel perform analyses using validated analytical methods on calibrated equipment.
Supply Chain

Dow Propylene Glycol USP/EP is backed by a global supply chain and nearly 60 years of experience as a leading PG manufacturer and supplier, providing our customers with:

- **Global Reach** with manufacturing plants strategically located in the U.S., Brazil, Germany and Australia.
- **Industry-Leading Production Capacity** with the largest PG production capacity globally.
- **Inventory Management Solutions** to help serve customers globally with strategically located terminal facilities.
- **Broad Transport Capabilities** to address customer needs globally via marine, rail or truck.
- **Product Stewardship** support throughout the entire supply chain.

Storage

- All storage tanks for Dow PG USP/EP are made from stainless steel or carbon-steel, lined with an FDA-approved food-grade coating.
- A nitrogen atmosphere is used to help prevent product contact with air, minimizing product oxidation and moisture absorption.
- Dedicated tanks, pumps, pipelines and sampling devices, used exclusively for Dow PG USP/EP.
- Documentation is maintained to help ensure traceability from manufacture to the final customer.
- An ongoing global stability program supports the two-year shelf life when product is stored as recommended.

Transportation

- Any transportation equipment used for land transport is approved for food-grade products.
- Dow’s approved carriers must meet documented requirements for the transport of pharmaceutical- and food-grade products.
- Prior to every transfer, product is sampled and analyzed to verify product identity.
- Tamper-evident seals are applied to all shipping containers.
- Representative retain samples are obtained and stored for three years.
Exceptional Solutions

Technology
Dow continually offers exceptional solutions to the industry to help create new technologies that can advance quality, reliability and sustainability. One recent example is the innovative hydrogen peroxide to propylene oxide (HPPO) technology, which was jointly developed by Dow and BASF. HPPO technology works to reduce wastewater by approximately 70 to 80 percent and energy use by approximately 35 percent, compared to conventional propylene oxide manufacturing technology. Propylene oxide is a key component in the manufacture of propylene glycol. HPPO technology was recognized with the Institution of Chemical Engineers’ Innovation and Excellence Award in Core Engineering in 2009 and the U.S. Presidential Green Chemistry Challenge Award in 2010.

Support and Service
Dow is known for expert global technical service and sales professionals who are dedicated to customer success:

- **TS&D Support** within the customer’s region, providing technical and EH&S know-how to support application-specific needs. In addition, customers can contact Dow for assistance in proper handling, storage and use of Dow Propylene Glycol USP/EP, in keeping with Dow’s commitment to Responsible Care®.

- **Excellent EH&S and Product Stewardship** from Dow as a long-time proponent of Responsible Care®.

- **In-Region Customer Service Representatives** (CSRs) who are dedicated to helping customers use Dow PG USP/EP effectively by offering support according to the customer’s region.

- **Sales Professionals** who are familiar with regional markets and are dedicated to championing customer needs throughout the sales process.

- **Education and Training** are always available to customers online at [www.dowpg.com](http://www.dowpg.com). Product information and customer service are also available 24 hours a day and seven days a week online via the Dow Answer Center.
Want to Know More?

You can learn more about Dow Propylene Glycol USP/EP and Dow’s other propylene glycol products at www.dowpg.com. Or contact a Dow representative to discuss your specific application needs.

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