



## Pure Enhancement

Dow PuraGuard™ Propylene Glycol USP/EP & Dipropylene Glycol LO+ for the Cosmetics and Personal Care Industry



### Purity is essential...

in products used for personal care, so turn to a product that offers confidence and security. Dow PuraGuard™ Propylene Glycol USP/EP<sup>1</sup> offers one of the highest-purity propylene glycols available in the marketplace—with a specified purity of 99.8 percent or greater, more than 60 years of industry experience, adherence to NSF/IPEC/ANSI 363 Good Manufacturing Practices for Pharmaceutical Excipients, and a two-year shelf life when stored according to Dow's recommendations.<sup>2</sup> Think of it as *your security for purity*.

Dow PuraGuard PG USP/EP offers excellent versatility in a wide range of cosmetics and personal care formulations:

- **Baby care:** wet wipes and antiseptics
- **Bath and shower products:** soaps, gels and moisturizers
- **Cosmetics:** blushes, lipsticks, eyeliners and eye shadows
- **Deodorants/antiperspirants:** roll-ons and sticks
- **First aid:** cleansers and disinfectants
- **Fragrances:** perfumes and colognes
- **Haircare products:** shampoos, conditioners, styling/coloring items
- **Oral care products:** mouthwashes, toothpastes
- **Shaving products:** creams, foams, gels, aftershave lotions
- **Skincare products:** creams, lotions and oils

Dow PuraGuard PG USP/EP can serve as an effective humectant to help prevent product drying (see Table 1) and it can act as a freeze-point depressant in products like shaving foams. It can also serve as a solvent and stabilizer for surfactants, emulsions and sunscreens, and it can be effective as a co-emulsifier for UV absorbers. It can serve as an effective carrier for flavors, fragrances, preservatives and plant extracts—and it can aid in the formulation of stable final products.

Formulators appreciate the ability of Dow PuraGuard PG USP/EP to enhance the solubility of other ingredients, improve formulation rheology, modify viscosity and contribute to a preservation effect in the formulation.

<sup>1</sup>Dow PuraGuard™ PG USP/EP is tested against and complies with the specific requirements of current USP, EP and JP (as described herein). The Dow PuraGuard™ trade name is currently commercially available only in North America, in conjunction with ANSI 363 certification.

<sup>2</sup>Reference Safety Data Sheet

## Excellent Quality for Pure Confidence

Dow PuraGuard™ Propylene Glycol USP/EP offers high quality and consistency, according to the industry's most stringent quality control processes, including third party certification against the NSF/IPEC/ANSI 363 Good Manufacturing Practices for Pharmaceutical Excipients standard. Dow's commitment to GDP (Good Distribution Practices) throughout the supply chain enables Dow PuraGuard PG USP/EP to be handled according to stringent requirements for consistent purity.

Dow PuraGuard PG USP/EP is tested against and certified according to the requirements for the following standards:

- Food Chemicals Codex (FCC)
- United States Pharmacopeia (USP)
- European Pharmacopeia (PhEur or EP)
- Japanese Pharmacopeia (JP)

In addition, Dow PuraGuard PG USP/EP meets the requirements and standards of the U.S. Food and Drug Administration (FDA), the European Council Directive 76/768/EEC<sup>3</sup> (Cosmetics Directive) with subsequent amendments, Regulation (EC) No. 1223/2009<sup>4</sup>, replacing Directive 76/768/EEC and selected other nation-specific regulations regarding cosmetics. Propylene glycol is listed in Annex 1 of Commission Decision 2006/257/EC establishing an inventory and a common nomenclature of ingredients employed in cosmetic products<sup>5</sup> under INCI name PROPYLENE GLYCOL, with the functions humectant, solvent, skin conditioner and viscosity controlling without any restrictions.

Dow PuraGuard PG USP/EP is free of allergy-stimulating substances, as specified in Annex III of Directive 2003/15/EC (an amendment of the Cosmetics Directive)<sup>6</sup>. It does not contain substances classified as carcinogenic, mutagenic or toxic for reproduction (CMR) substances.<sup>7</sup> In addition, it is listed by the Personal Care Products Council as an approved ingredient for cosmetic applications.<sup>8</sup>



Additional regulatory designations for Dow PuraGuard™ Propylene Glycol USP/EP:

- Designated as “safe for use in cosmetic products at concentrations up to 50 percent”<sup>9</sup> by the Cosmetic Ingredient Review (CIR) panel, referencing studies on skin irritation and sensitization potential.
- Generally Recognized As Safe (GRAS) by the U.S. FDA.
- International Fragrance Association (IFRA) - not listed as a regulated substance.

<sup>3</sup>European Council Directive 76/768/EEC of 27 July 1976 on the approximation of laws of the Member States relating to cosmetic products, OJ No. L 262, 27.9.1976, p.169

([http://ec.europa.eu/enterprise/cosmetics/html/consolidated\\_dir.htm](http://ec.europa.eu/enterprise/cosmetics/html/consolidated_dir.htm)).

<sup>4</sup>Regulation (EC) No. 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products, OJ No. L342, 22.12.2009, p. 59.

<sup>5</sup>Commission Decision 2006/257/EC of 9 February 2006 amending Decision 96/335/EC establishing an inventory and a common nomenclature of ingredients employed in cosmetic products, OJ No. L97, 5.4.2006, p.1.

<sup>6</sup>Directive 2003/15/ED of the European Parliament and of the Council of 27 February 2003 amending Council Directive 76/768/EEC on the approximation of the laws of the Member States relating to cosmetic products, OJ No. L66, 11.3.2003, p. 26. ([http://ec.europa.eu/enterprise/cosmetics/doc/200315/200315\\_en.pdf](http://ec.europa.eu/enterprise/cosmetics/doc/200315/200315_en.pdf)).

<sup>7</sup>REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006, OJ No. L351, 31.12.2008, p.1.

<sup>8</sup>[www.personalcarecouncil.org](http://www.personalcarecouncil.org)

<sup>9</sup>Final Report of the Safety Assessment of Propylene Glycol and Polypropylene Glycols, Cosmetic Ingredient Review, J. Am. Coll. Toxicol. 13(6): 473-91, 1994 (<http://www.cir-safety.org>).

**Table 1: Humectancy of Propylene Glycol**

Percentage by weight values of propylene glycol in water solutions that will be in equilibrium with air at various temperature and humidity conditions.

Air Temperature		Relative Humidity								
°C	°F	10%	20%	30%	40%	50%	60%	70%	80%	90%
-6.7	20	96.8	91.4	90.0	84.6	77	73	68	55	40
4.4	40	97.0	92.3	90.2	85.2	78	74	68	55	40
15.6	60	97.1	92.9	90.4	85.8	80	74	68	55	40
26.7	80	97.1	93.5	90.5	86.3	81	75	68	55	40
37.8	100	97.2	93.9	90.6	86.6	82	75	68	55	40
48.9	120	97.2	94.3	90.7	86.7	83	76	68	55	40

### Dipropylene Glycol LO+ for Fragrance and PC Market

- Dipropylene Glycol LO+ can provide excellent co-solvency for water, oils and hydrocarbons, with consistent purity and quality, minimal odor, low skin irritation potential, low toxicity and consistent isomer distribution.
- To help ensure your confidence in the purity and consistency of Dow’s DPG LO+, Dow manufactures and handles the product in accordance with current Good Manufacturing Practices (cGMP) as demonstrated by certification to NSF/IPEC/ANSI 363 Good Manufacturing Practices standards for our North America manufacturing sites.
- Dipropylene Glycol LO+ is also used as a coupling agent and humectant in a variety of cosmetic applications. The Cosmetic Ingredients Review issued a report in 1985 on the use of dipropylene glycol in cosmetic products.<sup>10</sup> In perfumes, it sometimes comprises greater than 50% of the total formulation, while in other applications its content is typically less than 10% weight. Specific product applications include wave sets, skin cleansing preparations (cold creams, lotions, liquids, and pads), deodorants, face, body and hand skincare preparations, moisturizing skincare products and lipsticks.

### Robust Supply Chain for Global Reach

With nearly 60 years of experience as a leading propylene glycol (PG) manufacturer and supplier, Dow has built a robust supply chain network that currently provides:

- Reliable global supply from strategically located manufacturing sites in the U.S., Brazil, Germany, Thailand and Australia.
- The largest production capacity in North America, including plants in two different states.
- Inventory management solutions from strategically located terminals around the world to help meet changing customer needs.



<sup>10</sup>Final Report on the Safety Assessment of Butylene Glycol, Hexylene Glycol, Ethoxydiglycol, and Dipropylene Glycol; Mary Anne Liebert, Inc., publishers, Journal of the American College of Toxicology, Volume 4, Number 5, 223, 1985

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*Innovating For You*

**For more information and product samples, contact us at your convenience:**

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