



## Dow Dipropylene Glycol LO+

### General Description

Dipropylene Glycol LO+ from Dow is a high-purity product, designed for use in odor-sensitive applications such as fragrances and cosmetics. The material, a distilled product with a purity greater than 99.5% as dipropylene glycol, is a liquid that is practically odorless, colorless, water-soluble and hygroscopic. DPG LO+ has a low vapor pressure and medium viscosity. It is available from Dow in drums and bulk quantities.

Dipropylene glycol LO+ is a mixture of structural isomers (oxybispropanol, CAS 25265-71-8, EINECS 246-770-3), the composition being defined by the manufacturing process, and comprising:

1,1'-oxybis-2-propanol (CAS 110-98-5, EINECS 203-821-4)  
 2,2'-oxybis-1-propanol (CAS 108-61-2)  
 2-(2-hydroxypropoxy)-1-propanol (CAS 106-62-7)

Dow provides its Dipropylene Glycol LO+ with enhanced consistency by defining the isomer ranges in the sales specification. For a copy of the specification, please contact your Dow representative.

### Properties<sup>1</sup> of Dipropylene Glycol LO+

Chemical Name	Oxybispropanol
Formula	C <sub>6</sub> H <sub>14</sub> O <sub>3</sub>
Molecular Weight (g/mol)	134.2
CAS Number	25265-71-8
EINECS Number	246-770-3
Distillation Range, 101.3 kPa (1 atm)	228 – 236°C (442 – 457°F)
Vapor Pressure, 25°C (77°F)	0.0021 kPa (0.016 mm Hg)
Freezing Point	Supercools
Pour Point	-39°C (-38.2°F)
Density, 25°C (77°F)	1.022 g/cm <sup>3</sup>
60°C (140°F)	0.998 g/cm <sup>3</sup>
Refractive Index, 20°C (68°F)	1.439 – 1.442
Viscosity, 25°C (77°F)	75.0 centipoise (mPa.s)
60°C (140°F)	10.9 centipoise (mPa.s)
Specific Heat, 25°C (77°F)	2.18 J/(g·K) (0.52 Btu/lb·°F)
Surface Tension, 25°C (77°F)	35 mN/m (dynes/cm)
Flash Point, Pensky-Martens Closed Cup	124°C (255°F)
Thermal Conductivity, 25°C (77°F)	0.1672 W/(m·K) (0.09661 Btu/hr ft·°F)
Electrical Conductivity, 25°C (77°F)	< 6 micro S/m
Heat of Formation	-628 kJ/mol (-150 Kcal /g-mol)
Heat of Vaporization, 25°C (77°F)	45.4 kJ/mol (257 Btu/lb·°F)

<sup>1</sup>These data are laboratory results typical of the product, and should not be confused with, or regarded as specifications. For a copy of the sales specification, contact your Dow representative or visit our web site at [www.dowpg.com](http://www.dowpg.com).

## Applications

### Fragrance & Cosmetic Applications

Dipropylene Glycol LO+ is the solvent of choice for many fragrance and cosmetic applications. The excellent co-solvency for water, oils and hydrocarbons, coupled with its low odor, low skin irritation potential, low toxicity, consistent isomer distribution and excellent quality, make it an important raw material for this industry. To help ensure your confidence in the purity and consistency of Dow's DPG LO+, we manufacture and handle the product in accordance with cosmetic current Good Manufacturing Practices (cGMP).<sup>1</sup>

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>2</sup> The conclusion of this report was that DPG is safe as presently used in cosmetic formulations. 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 skin care preparations, moisturizing skin care products and lipsticks.

DPG LO+ complies with the European council directive 76/768/EEC<sup>3</sup> and subsequent amendments and adaptations. DPG is included in the INCI list (International Nomenclature Cosmetic Ingredients) with the INCI name Dipropylene Glycol.

### Food Applications

Dipropylene glycol LO+ is not cleared for use as a direct food additive. However, in the U.S., it can be used as a component in food-contact articles such as adhesives,<sup>4</sup> paper,<sup>5</sup> paperboard,<sup>5</sup> defoaming agents<sup>6</sup> and reactive components.<sup>7,8,9</sup>

In countries of the European Union, DPG LO+ is cleared for indirect food contact applications as a monomer or other starting substance in the manufacture of plastic materials for food contact. Refer to EU Commission Directive 90/128 EEC<sup>10</sup> (PM/REF No. 16660) and subsequent amendments.

The applicable regulations for food contact are country-specific and must be consulted for details prior to using this material.

## Storage & Handling

DPG LO+ has a shelf life of one year when stored below 40°C (104°F) in closed containers away from sources of UV light.

For more details about product handling and safety information, please refer to the Dow Material Safety Data Sheet (MSDS/SDS).

## References

1. Cosmetic Handbook, U.S. Food and Drug Administration; Center for Food Safety and Applied Nutrition; FDA/IAS\* Booklet: 1992  
[available at [www.cfsan.fda.gov/~dms/cos-hdb2.html](http://www.cfsan.fda.gov/~dms/cos-hdb2.html)]
2. 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
3. Council Directive 76/768/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products, OJ No L 262, 27.9.1976, p.169
4. U.S. Code of Federal Regulations, 21 CFR 175.105 (c)(5)
5. U.S. Code of Federal Regulations, 21 CFR 176.170 (a)(5)
6. U.S. Code of Federal Regulations, 21 CFR 176.200 (d)(3)
7. U.S. Code of Federal Regulations, 21 CFR 175.320 (b)(3)(i)
8. U.S. Code of Federal Regulations, 21 CFR 177.1200 (c)
9. U.S. Code of Federal Regulations, 21 CFR 177.2420 (a)(2)
10. Commission Directive of 23 February 1990 relating to plastics materials and articles intended to come into contact with foodstuffs, OJ L 75, 21.3.1990, p.19

Additional information is available from your Dow representative or on our web site or by calling:

United States & Canada: 1-800-447-4369  
Europe: +32-3-450-2240  
Pacific: +60-3-7958-3392  
China: +800-600-0015  
Latin America: +989-832-1426  
[www.dowpg.com](http://www.dowpg.com)

Notice: No freedom from any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Dow assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

