Technical Data Sheet

Dow Dipropylene Glycol LO+

General Description

Dipropylene Glycol (DPG) LO+ from Dow is a high-purity product, designed for use in odor sensitive applications such and fragrances and cosmetics. The material, a distilled product with a purity greater than 99.5% as dipropylene glycol, is a liquid that is practically odourless, water soluble and hygroscopic. It is available from The Dow Chemical Company in drum and bulk quantities.

Dipropylene Glycol LO+ is a mixture of structural isomers (oxybispropanol CAS 25265-71-8, EINECS 246-770-3), 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.

Typical Component Properties[1]

Chemical Name	Oxybispropanol
Formula	$C_6H_{14}O_3$
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	Super cools
Pour Point	-39°C (-38.2°F)
Density, 25°C (77°F)	1.022 g/cm³
60°C (140°F)	0.998 g/cm³
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)

1. These are typical values and should not be construed as specifications.

Applications

Dipropylene Glycol LO+ is the solvent of choice for many fragrance and cosmetics applications. An overview of the typical uses of DPG LO+ is given below.

It must be emphasized that it is the user's responsibility to consult area and country-specific regulations for details of approved use.

To help ensure confidence in the purity and consistency of Dow's DPG LO+ , most of the current Good Manufacturing Practice (cGMP) principles for pharmaceutical excipients, as published by the International Pharmaceutical Excipients Council (IPEC), are applied by Dow during all manufacturing and handling steps of DPG LO+, such as

- Dedicated facilities
- Extensive additional quality assurance testing
- Dedicated bulk storage
- Transportation in stainless steel or lined equipment
- Label management
- Sealing procedures
- Traceability through the whole supply chain
- Personnel qualification and training programs

Fragrance & Cosmetics 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. 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[2]. 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 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, paper, paperboard, defoaming agents and reactive components.

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.

The applicable regulations for food contact are country-specific and must be consulted for details prior to using DPG LO+.

References

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

Storage and Handling

Dipropylene Glycol LO+ is stable for at least one year when stored at ambient temperatures in closed containers and away from sunlight and other sources of UV light.

Where product heating is utilized (i.e. for bulk storage and/or transport containers) the product temperature should be controlled to prevent unintentional overheating over extended periods as this may potentially lead to accelerated oxidative degradation of the product. As a general guide Dow recommends heating up to not more than 40°C.

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

Product Stewardship

The Dow Chemical Company and its subsidiaries ("Dow") has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Dow products— from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Safety Considerations

Material Safety Data (MSD) sheets are available from The Dow Chemical Company. MSD sheets are provided to help customers satisfy their own handling, safety and disposal needs and those that may be required by locally applicable health and safety regulations. MSD sheets are updated regularly, therefore, please request and review the most current MSD sheet before handling or using any product. These are available from the nearest Dow sales office.

Customer Notice

Dow encourages its customers to review their application of Dow products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they were not intended or tested, Dow personnel will assist customers in dealing with ecological and products safety. Your Dow sales representative can arrange the proper contacts.

Contact information:
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