Dow Tripropylene Glycol, Acrylate Grade

General Description

Tripropylene Glycol, Acrylate (TPG Ac) Grade is a high-purity tripropylene glycol, manufactured to contain only low levels of carbonyl and peroxide compounds, making it ideal for use as a reactive chemical intermediate in the radiation-cure industry. TPG, a coproduct in the high temperature/pressure hydrolysis of propylene oxide with water to form monopropylene glycol, is a colorless, water soluble, low toxicity, low vapor pressure, medium viscosity, hydroscopic liquid with a faint characteristic glycol odor.

The product is available from The Dow Chemical Company in bulk quantities as a distilled material with a typical assay of minimum 99% purity. Our tightly controlled manufacturing process defines the consistent composition and isomer distribution of the product, comprising the following isomers:

1,1’-[(1-methyl-1,2-ethanediyl)bis(oxy)]bis-2-propanol (CAS 1638-16-0) (sec, sec-tripropylene glycol)
2,2’-[(1-methyl-1,2-ethanediyl)bis(oxy)]bis-1-propanol (pri, pri-tripropylene glycol)
2-[2-(2-hydroxypropoxy)-2-propoxy]-1-propanol (pri, sec-tripropylene glycol)
2-[2-(2-hydroxypropoxy)-propoxy]-1-propanol (CAS 45096-22-8) (pri, sec-tripropylene glycol)

Typical Component Properties

| Chemical Name | Formula | Molecular Weight (g/mol) | CAS Number | EINECS Number | Distillation Range, 101.3 kPa (1 atm) | Vapor Pressure, 25°C (77°F) | Freezing Point | Pour Point | Density, 25°C (77°F) | Refractive Index, 20°C (68°F) | Viscosity, 25°C (77°F) | 60°C (140°F) | Refractive Index, 20°C (68°F) | Viscosity, 60°C (140°F) | Specific Heat, 25°C (77°F) | Surface Tension, 25°C (77°F) | Flash Point, Pensky-Martens Closed Cup | Thermal Conductivity, 25°C (77°F) | Heat of Formation | Heat of Vaporization, 25°C (77°F) |
|---------------|---------|--------------------------|------------|---------------|--------------------------------------|--------------------------------|---------------|-----------|---------------------|--------------------------------|------------------------|----------------|--------------------------------|------------------------|--------------------------|-----------------------------|-----------------------------|----------------|-----------------------------|
| [1-methyl-1,2-ethanediyl]bis(oxy)]bispropanol | C₉H₂₀O₄ | 192.3 | 24800-44-0 | 246-466-0 | 265 - 275°C (509 - 527°F) | 0.0003 kPa (0.002 mm Hg) | Super cools | -41°C (-42°F) | 1.019 g/cm³ | 1.415 – 1.4425 | 57.2 centipoise (mPa.s) | 9.7 centipoise (mPa.s) | 1.46 J/(g°K) (0.52 Btu/lb/°F) | 34 mN/m (dynes/cm) | 143°C (289.4°F) | 0.158 W/(m°K) (0.0914 Btu/hr ft°F) | -831 kJ/mol (-199 Kcal /g-mol) | 35.36 kJ/mol (200 Btu/lb/°F) |

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

Tripropylene Glycol, Acrylate Grade is specifically designed for use as a raw material for radiation curable formulations. It is typically reacted with acrylic acid in an esterification reaction to form tripropylene glycol diacrylate, an important ingredient in the fast growing radiation cure industry. TPG diacrylate is used as a reactive diluent to lower the viscosity of formulations prior to application. Radiation curing is used for printing inks, varnishes, paints and coating applications and offers several advantages, including no post curing, low volatile organic compound (VOC) emissions, energy efficiency, fast processing speeds, compact plant size, and excellent finish quality.

Tripropylene Glycol, Acrylate Grade is specifically monitored for acidity, aldehydes and peroxides contents that can cause color and operational problems in the synthesis of the diacrylates. Typical values for these impurities are in the low ppm range.

Tripropylene Glycol, Acrylate Grade is for technical applications only.

Storage and Handling

TPG Ac is stable for at least 12 months 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. Nitrogen padding is recommended.

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:
For more information about this product please call The Dow Chemical Company.
North America: 1-800-447-4369
Latin America: (+55) 11-5184-8722
Europe: (+31) 11-567-2626
Asia/Pacific: (+60) 3-7965-5392
http://www.dow.com/propyleneglycol/

NOTICE: No freedom from infringement of 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 government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to “Dow” or the “Company” mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.