

Technical Information

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Pluriol® E 300

® = Registered trademark of BASF

Polyethylene glycol for the chemical and allied industries

Chemical nature

Pluriol® E 300 is a polyethylene glycol that conforms to the general formula $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$.

The degree of polymerization n determines the average molar mass of this product and the properties it displays.

PRD-No.*

30044124

*BASF's commercial product numbers.

Appearance

Pluriol® E 300 is a clear, colorless liquid at 23 °C.

Handling and Storage**Handling**

- a) Pluriol® E 300 should be stored indoors in a dry place. Storerooms must not be overheated.
- b) Pluriol® E 300 is hygroscopic, and care needs to be taken to exclude moisture. Drums must be resealed each time they are opened.
- c) The storage temperature should not be allowed to fall below the melting point if at all possible.
- d) Drums that have solidified or that have begun to precipitate should be reconstituted by gentle heating, preferably in a heating cabinet. The temperature must not be allowed to exceed 70 °C. This also applies if drums are heated by external electrical elements. Internal electrical elements should not be used because of the localized anomalies in temperature that they cause.
- e) Pluriol® E 300 must be blanketed with nitrogen if it is stored in heated tanks (at 60 – 70 °C) to prevent it from coming into contact with air. Constant, gentle stirring helps to prevent it being discolored as a result of prolonged contact with electrical elements or external heating coils.
- f) Please refer to the latest Safety Data Sheet for detailed information on product safety.

Materials

The following materials can be used for tanks and drums:

- a) Stainless steel 1.4541 – AISI 321 stainless steel (X6 CrNiTi 1810)
- b) Stainless steel 1.4571 – AISI 316 Ti stainless steel (X6 CrNiMoTi 17122)
- c) Stainless steel 1.4306 – AISI 321 L stainless steel (X2 CrNi 1911)

Shelf life

Provided it is stored properly and drums are kept tightly sealed, Pluriol® E 300 has a shelf life of at least two years in its original packaging.

Properties

Some physical properties are listed in the table below. These are typical values only and not all of them are monitored on a regular basis. They are correct at the time of publication and do not necessarily form part of the product specification. A detailed product specification is available on request or via BASF's WorldAccount: <https://worldaccount.basf.com> (registered access).

Pluriol® E 300	Unit	Value
Physical form		liquid
Average molar mass (calculated from the OH number according to DIN 53240)	g/mol	300
pH value (EN 1262, 5% in water at 23 °C)		approx. 7
Density (DIN 51757, 23 °C)	g/cm ³	approx. 1.12
Clear melting point	°C	approx. -10
Viscosity (DIN 51562)		
at 20 °C	mm ² /s	approx. 85
at 50 °C	mm ² /s	approx. 20
at 99 °C	mm ² /s	approx. 5
Water content (EN 13267)	%	<0.3
Ash content (DIN 51575)	%	max. 0.05
Flash point (ISO 2592)	°C	>200

Solubility

Pluriol® E 300 is easy to dissolve in water, and its solubility is not affected by water hardness. It is resistant to moderately strong acids, alkalis and salt solutions. Generally speaking, substances in this group are fairly inert, but it can react with vegetable and synthetic tanning agents and other substances that contain phenolic hydroxyl groups to form sparingly soluble addition products.

Pluriol® E types are soluble in alcohols. Their solubility decrease as their molar mass increase. Pluriol® E 300 is soluble in most aromatic solvents, but it is virtually insoluble in aliphatic hydrocarbons and petroleum fractions.

Stability

Pluriol® E 300 is thermally stable in the absence of oxygen.

Compatibility

Pluriol® E types are freely intermiscible which enables homogeneous mixtures with specific properties to be prepared.

Pluriol® E 300 is compatible with nonionic surfactants such as our Lutensol®, Plurafac® and Pluronic® types. It is miscible to a greater or lesser extent with monomeric and polymeric substances of a largely hydrophilic nature – such as dyes and pigments, anionic and cationic surfactants, and animal, vegetable and synthetic glues and binders – and its compatibility is good. The miscibility of Pluriol® E 300 with fats, fatty acids, alcohols and oils, natural and synthetic ester and hydrocarbon waxes, petroleum fractions and other substances of a predominantly hydrophobic nature is limited. Nevertheless, pseudomixtures or pasty dispersions can be made from some combinations of products by melting them into a vessel and allowing them to cool before stirring.

Solids, such as chromatic pigments, ceramic pigments, and abrasives in polishes and solid lubricants, can be ground into stable, homogeneous pastes with Pluriol® E 300, providing that the solids are properly wetted, the viscosity is kept within reasonable limits, and the various ingredients are correctly proportioned.

Applications

Pluriol® E 300 is a water-soluble polyether alcohol. It can be employed as solubilizer, lubricant, dispersant and mould release agent in a variety of applications. It can also be used to modify the viscosity of liquids, and can be used as heat-transfer and hydraulic fluid. Polyether diols are also used as intermediates in organic syntheses.

Solubilizer Dispersant

Pluriol® E 300 is used in the detergents and cleaners industry to solubilize mixtures of surfactants in aqueous formulations.

Pluriol® E 300 has a high solvent power and dispersing capacity for many types of dyes and pigments, and it is an effective solubilizer for basic dyes and some dye bases. It is used in the office supplies industry to formulate inks with high coverage. The consistency of the ink can be controlled by using mixtures of solid and liquid Pluriol® E types.

Pluriol® E 300 can be used as solvent for basic dyes in flexographic inks.

Similarly, it can also be used as solubilizer and dispersing media for liquid and pasty pigment preparations, toner pastes and glaze stains in the textile, paints and ceramic industries.

Plasticizer Humectant Impregnating agent

These applications depend on the capacity of Pluriol® E 300 to penetrate and diffuse into various materials. Pluriol® E 300 is compatible with a wide range of materials, but its compatibility may be limited in some instances. Its hygroscopicity is one of the factors limiting its compatibility, but this can be alleviated by selecting specific products from the range.

Pluriol® E 300 can also be employed as plasticizer for some special grades of paper, and it can be used to plasticize adhesives and cellulose film with no unwanted side effects. It may also be used to impregnate various materials such as pencil wood in order to improve their elasticity, dimensional stability, workability and moisture retention.

Lubricant

Pluriol® E 300 can be used in some industrial processes to reduce internal and external friction. In the ceramics industry for instance, it can be added to extrusion compounds such as ceramic body in order to reduce the friction generated in the manufacture of insulators, pipes and rods, etc. The main advantage here is that the ware can be easily demoulded, no residue is left behind, and no carbon deposits are formed during firing.

Pluriol® E 300 can be used as lubricant in applications in which the presence of oil can cause problems, such as in wire drawing, deep drawing and grinding. Pluriol® E 300 is a very effective dispersing media for solid lubricants and for use in grinding and polishing compounds. Its solubility in water makes the residue much easier to remove.

Wafer cutting fluid

In the photovoltaic industry Pluriol® E 300 represents the standard abrasive carrier fluid for wafer cutting. Based on its low water content, low heavy metal content and defined electric conductivity, it guarantees constant process conditions and high wafer quality. Moreover, the high recycling efficiency of this product contribute to reduced raw material consumption and manufacturing cost.

Intermediates for chemical syntheses

Pluriol® E 300 is a polyether diol. It can be used as intermediate in chemical reactions in which hydroxyl groups participate, such as esterification, etherification and reaction with isocyanates. It can be used as feedstock in the production of surfactants such as fatty acid polyglycol esters and alkyl polyglycol ethers.

Safety

We are not aware of any ill effect that can result from using Pluriol® E 300 for the purpose for which it is intended and from processing it in accordance with current practices.

According to the experience that we have gained over many years and other information at our disposal, Pluriol® E 300 does not exert harmful effects on health, provided it is used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our Safety Data Sheets are observed.

Labelling

Please consult the current Safety Data Sheets for information on the classification and labelling of our products and other information relevant to safety.

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