Ester India



# PRODUCT DATA SHEET

## EsoDant EHG

### ETHYLHEXYLGLYCERIN

(INCI: ETHYLHEXYLGLYCERIN)

# EsoDant - EHG

**Product Code FP 015 | Synonym : 3-[(2-Ethylhexyl)oxy]propane-1,2-diol, Octoxyglycerin | INCI : Ethylhexylglycerin**

**Description :**

EsoDant - EHG is cosmetic-grade Ethylhexylglycerin, a glyceryl ether manufactured by Ester India at Nandesari, Vadodara, with a minimum purity of 99 %. It is a clear, colourless, nearly odourless liquid that works in three ways at once: as a deodorant active that inhibits the growth of odour-causing bacteria while leaving the skin flora intact, as a skin-conditioning agent that improves the feel of emulsions, and as a preservative booster. By lowering the interfacial tension at the microbial cell membrane it potentiates conventional preservatives - phenoxyethanol, organic acids, caprylyl glycol - so that they work at lower doses, and it is the booster in Ester India's EsoDant - 9010 and EsoDant - SC10 blends. Ethylhexylglycerin is not itself a listed preservative and is unrestricted under the EU Cosmetics Regulation, which makes it a key building block for paraben-free, formaldehyde-free and 'preservative-free' concepts.

**Features and Benefits**

EsoDant - EHG demonstrates the following features and benefits:

- Multifunctional: deodorant active, skin-conditioning agent and preservative booster
- Boosts phenoxyethanol, organic acids and glycols - lower preservative doses, wider spectrum, faster kill
- Not a listed preservative - unrestricted in the EU, USA and Asia
- Effective across the full formulation pH range of 3 - 12
- Temperature stable - may be added to formulations up to 80 °C
- Clear, colourless and nearly odourless - no effect on colour or fragrance
- Excellent skin compatibility; not sensitising
- Soluble in oils, ethanol and glycols; dispersible in water

**Application / Use**

EsoDant - EHG is incorporated into emulsified, oil-based and surfactant-based personal care products, such as:

- Deodorants and antiperspirants - roll-ons, sticks, sprays
- Creams, lotions and emulsions (booster and emollient)
- Wet wipes and baby wipes
- Sun care and after-sun products
- Foot care and intimate care products
- Shampoos, conditioners and body washes
- Micellar waters, toners and serums
- 'Preservative-free' concepts with caprylyl glycol or organic acids

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**Physical properties and Product Specifications**

| | |
|---|---|
| Appearance | Clear colourless liquid |
| Identification (GC) | Retention time matches the standard |
| Purity (GC) | 99 % minimum |
| Moisture content | 0.20 % maximum |
| Colour (Hazen) | 30 maximum |
| Density at 25°C | 0.954 - 0.960 g/ml |
| Refractive index | 1.449 - 1.453 |
| Flash point | 152°C |
| Water solubility | Approx. 1 g/l at 20°C |

**Chemical Identification**

| CTFA / INCI Name | CAS Number | EINECS Number |
|---|---|---|
| Ethylhexylglycerin | 70445-33-9 | 408-080-2 |

Molecular formula $C_{11}H_{24}O_3$ | Molecular weight 204.3 g/mol

Each batch is produced to exact specifications and a certificate of analysis is provided with each order.

**Formulating Considerations**

Ethylhexylglycerin is easy to formulate with and is compatible with most raw materials. The following guidelines will help optimise its booster and deodorant performance; as part of a best practice manufacturing strategy, confirm compatibility and efficacy in the development of new products.

**Typical Use Levels -** EsoDant - EHG is typically used at 0.3 - 1.0 % by weight in the final formulation. As a preservative booster 0.3 - 0.5 % alongside phenoxyethanol, an organic acid or caprylyl glycol is usual; as a deodorant active 0.3 - 1.0 %. There is no regulatory ceiling, but above about 1 % the skin-feel contribution dominates and further gains in efficacy are small. Ready-made blends are available: EsoDant - 9010 (phenoxyethanol 90 : ethylhexylglycerin 10) and EsoDant - SC10 (ethylhexylglycerin + caprylyl glycol). Ester India can supply samples and technical support to help determine the optimum system.

**Addition to the Formulation -** EsoDant - EHG is a liquid that can be added at any stage of the process where there is good agitation. It is soluble in the oil phase of emulsions and in ethanol, glycols and surfactant concentrates, and dispersible in water at about 0.1 %. In clear aqueous systems pre-dissolve it in a glycol, in the surfactant or in a solubiliser; in emulsions add it to the oil phase.

**Effect of Temperature -** Stable up to 80 °C with no loss in performance. For systems processed above 80 °C, add EsoDant - EHG during the cooling stage once the batch is below 80 °C.

**Effect of pH -** Ethylhexylglycerin is a non-ionisable glyceryl ether, so its activity is independent of pH and it is stable across the entire formulation range of pH 3 - 12. This makes it a booster for both pH-independent preservatives such as phenoxyethanol and pH-dependent organic acids such as benzoate and sorbate.

**Compatibility -** Compatible with anionic, cationic, nonionic and amphoteric surfactants, emollients, glycols and most personal care raw materials. In systems with high levels of ethoxylated emulsifiers or solubilisers the free fraction may be reduced through micellar solubilisation; confirm the use level by challenge testing. Ethylhexylglycerin can slightly reduce the viscosity of carbomer gels and thin emulsions - allow for it in the thickener level.

**Deodorant Activity**

Ethylhexylglycerin inhibits the growth of the Gram-positive bacteria that break down sweat into odorous compounds - in particular Corynebacterium species - without the broad antimicrobial action of a preservative, so the natural skin flora is preserved. It is used alone in 'aluminium-free' and 'alcohol-free' deodorants and alongside antiperspirant salts, typically at 0.3 - 1.0 %.

**Regulatory Status**

Ethylhexylglycerin is globally approved as a cosmetic ingredient with no concentration limit:

Europe

- Not listed in Annex V of Regulation (EC) No 1223/2009 - used as a skin-conditioning and deodorant agent, no restriction on concentration
- Harmonised CLP entry 603-168-00-9; see the Safety Data Sheet for the classification

Americas Approved for use - no restriction

Asia

- Japan, China (IECIC) and ASEAN: listed cosmetic ingredient, no restriction

Regulations are subject to revision. Users should confirm the status against the current local regulation before placing a finished product on the market.

**Handling, Storage, and Disposal** Store in a cool and dry place away from heat, frost and direct sunlight, in tightly closed original containers. Shelf life 36 months from the date of manufacture when stored as directed. Available in 25 kg and 200 kg HDPE drums and smaller packs.

**Health and Safety** EsoDant - EHG is classified as causing serious eye damage; wear eye protection when handling the concentrate. Please refer to the Safety Data Sheet (SDS).

**Recommended Use Levels**

| Application | EsoDant - EHG | Partner preservative |
|---|---|---|
| Booster for phenoxyethanol (leave-on) | 0.3 – 0.5 % | EsoDant - PE 0.5 – 0.9 % |
| Booster for organic acids (pH 4 – 5.5) | 0.3 – 0.5 % | EsoDant - SB 0.5 – 1.0 % |
| 'Preservative-free' concept | 0.5 – 1.0 % | Caprylyl glycol 0.3 – 0.5 % |
| Deodorants and antiperspirants | 0.3 – 1.0 % | – (deodorant active) |
| Wet wipes | 0.3 – 0.5 % | EsoDant - PE or 9010 |
| Creams, lotions, sun care | 0.3 – 0.5 % | EsoDant - PE or 9010 |

Ethylhexylglycerin on its own is not a preservative and should not be relied on for the microbiological protection of a finished product; its role is to extend the spectrum and reduce the dose of the partner preservative, and to control odour-causing bacteria on skin. Recommended use levels are guideline starting points only. It is the responsibility of the customer to establish stability and preservative efficacy in the final formulation by challenge testing to USP <51> or EP 5.1.3.

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Ester India

128/29-30 GIDC, Nandesari,
Vadodara - 391340, INDIA.

office@esterindia.com
www.esterindia.com

+91 98980 01188
+91 98988 72338