



PRODUCT DATA SHEET

EsoDant PE

PHENOXYETHANOL

(INCI: PHENOXYETHANOL)

EsoDant - PE

Product Code FP018 | Synonym : 2-Phenoxyethanol, Ethylene Glycol Monophenyl Ether | INCI : Phenoxyethanol

Description : EsoDant - PE is cosmetic-grade 2-Phenoxyethanol, manufactured by Ester India at Nandesari, Vadodara, with a minimum purity of 99.5 % and a free phenol content controlled to 10 ppm maximum (5 ppm and 25 ppm grades are also available). It is a clear, colourless, faintly aromatic liquid with a long history of safe use as a broad-spectrum preservative in personal care, cosmetic and home care formulations, and is permitted for both leave-on and rinse-off products worldwide. Phenoxyethanol is free from parabens, formaldehyde and formaldehyde donors, isothiazolinones and halogen-organic compounds, and its activity is essentially independent of pH. It is also used as a solvent and fixative for fragrances and as a coupling agent.

Features and Benefits

EsoDant - PE demonstrates the following features and benefits:

- Broad-spectrum activity against Gram-negative and Gram-positive bacteria and yeast
- Globally approved for leave-on and rinse-off applications at up to 1.0 %
- Free from parabens, formaldehyde donors, isothiazolinones and halogens
- Effective and stable over the full formulation pH range of 3 - 12
- Temperature stable - may be added to formulations up to 80°C
- Compatible with anionic, cationic, nonionic and amphoteric surfactants
- Low free phenol (10 ppm max) - virtually odourless in the finished product
- Ideal base for booster systems: combine with Ethylhexylglycerin (EsoDant - 9010), organic acids or caprylyl glycol to extend activity against mould

Application / Use

EsoDant - PE is easily incorporated into water-based and emulsified products, such as:

Personal Care & Cosmetics

- Skin creams, lotions and emulsions
- Shampoos and conditioners
- Body washes and liquid soaps
- Wet wipes and baby wipes
- Serums, toners and micellar waters
- Sun care products
- Colour cosmetics
- Fragrances and perfumery bases

Home Care

- Floor and surface cleaners
- Fabric softeners
- Liquid detergents
- Air fresheners and fragrance products

Physical properties and Product Specifications

Appearance	Clear liquid
Colour	Colourless, 5 APHA max
Odour	Faint characteristic
Specific gravity at 20°C	1.100 - 1.110
Refractive index	1.537 - 1.539
Acid value	0.5 max
Moisture	0.5 % max
Purity (GC)	99.5 % min
Free phenol	10 ppm max
Phenoxyethoxyethanol (PEE)	0.05 % max
Flash point (closed cup)	122°C

Chemical Identification

CTFA / INCI Name	CAS Number	EINECS Number
Phenoxyethanol	122-99-6	204-589-7
Molecular formula C ₈ H ₁₀ O ₂ Molecular weight 138.2		

Grades

EsoDant - PE (FP018)	Free phenol 10 ppm max - standard cosmetic grade
EsoDant - PE 5 (FP066)	Free phenol 5 ppm max - low-phenol grade
EsoDant - PE 25 (FP018A)	Free phenol 25 ppm max - industrial grade

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

Formulating Considerations

Phenoxyethanol is one of the most forgiving preservatives to formulate with. The following guidelines will help optimise performance and treatment cost; as part of a best practice manufacturing strategy, confirm compatibility and efficacy in the development of new products.

Typical Use Levels - EsoDant - PE is typically used at 0.5 - 1.0 % by weight in the final formulation. In the European Union, Japan, China and ASEAN the concentration of Phenoxyethanol in the ready-to-use product must not exceed 1.0 %. Used alone, Phenoxyethanol is strongest against bacteria and weaker against mould; for leave-on products with a high water activity, or where a lower dose is wanted, combine it with a booster such as Ethylhexylglycerin - supplied ready-blended as EsoDant - 9010 - or with an organic acid. Ester India can supply samples and technical support to help determine the optimum system.

Addition to the Formulation - EsoDant - PE is a liquid that can be added at any stage of the process where there is good agitation. In emulsions it may be added to the water phase or the oil phase. Solubility in water is about 2.7 % at 20°C; in clear aqueous systems add it slowly with vigorous stirring, or pre-dissolve it in a glycol or surfactant concentrate.

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

Effect of pH - Phenoxyethanol is a non-ionisable alcohol, so its activity is essentially independent of pH and it is stable across the entire formulation range of pH 3 - 12. This gives considerable flexibility compared with organic acid preservatives, which lose activity above their pKa.

Compatibility - Compatible with anionic, cationic, nonionic and amphoteric surfactants and with most raw materials used in personal care and home care. High levels of ethoxylated nonionic emulsifiers and solubilisers can reduce the free, active fraction through micellar solubilisation; confirm the use level by challenge testing in such systems.

Regulatory Status

EsoDant - PE is globally approved, subject to the following regional limits on Phenoxyethanol:

Europe

- Listed in Annex V, entry 29 of Regulation (EC) No 1223/2009 at a maximum concentration of 1.0 % - rinse-off and leave-on

Americas Approved for use - no restriction on Phenoxyethanol

Asia

- Japan: maximum Phenoxyethanol concentration of 1.0 % - rinse-off and leave-on
- China: maximum Phenoxyethanol concentration of 1.0 %
- ASEAN: harmonised with the European Union at 1.0 %

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 and direct sunlight, in tightly closed original containers. Retest period 24 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 Please refer to the Safety Data Sheet (SDS).

Spectrum of Activity and Recommended Use Levels

Application	EsoDant - PE alone	With booster (EsoDant - 9010)
Skin creams and lotions (leave-on)	0.8 - 1.0 %	0.5 - 1.1 %
Serums, toners, micellar waters	0.8 - 1.0 %	0.6 - 1.1 %
Wet wipes	0.8 - 1.0 %	0.5 - 1.0 %
Shampoo, body wash, liquid soap	0.5 - 1.0 %	0.5 - 0.9 %
Home care liquids	0.5 - 1.0 %	0.4 - 0.8 %

Phenoxyethanol is active against *Pseudomonas aeruginosa*, *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*; activity against *Aspergillus brasiliensis* is weaker and is the reason booster systems are recommended for leave-on products. 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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