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TECHNICAL DATA SHEET

Product Name: Diglycerin

Raw Material Name: Diglycerin

INCI Name: Diglycerin

CAS: 59113-36-9

Synonyms: Diglycerol; α,α′-Diglycerol; Oxybispropanediol; 3-(2,3-dihydroxypropoxy)propane-1,2-diol

Chemical Classification: Polyol; glycerin dimer.

Functional Category: Humectant; skin-conditioning agent; solvent.

Molecular Formula: C6H14O5

Molecular Weight: 166.17 g/mol

Chemical Nature and Structure: Diglycerin is a hydrophilic polyol composed of two glycerin units linked by an ether bond. The molecule contains four hydroxyl groups that enable extensive hydrogen bonding with water molecules and determine its pronounced humectant properties. Compared with glycerin, it has a higher molecular weight and a different sensory profile, and may therefore contribute to a more pleasant sensory profile and a reduction in pronounced tackiness in appropriately formulated humectant systems. Diglycerin is chemically defined as a glycerin dimer and belongs to the polyglycerin group.

Description: Diglycerin is a highly hydrophilic polyol used primarily as a humectant, skin-conditioning agent and solvent in cosmetic formulations. Due to the presence of four hydroxyl groups, it attracts and binds water and contributes to maintaining hydration in the superficial layers of the skin. Its use may help reduce sensations of dryness and tightness and improve skin softness and smoothness. In cosmetic formulations it may be used alone or in combination with glycerin and other humectants to adjust the intensity of hydration and the sensory profile of the product. Diglycerin is a colorless to slightly yellowish, highly viscous liquid, practically odorless and very soluble in water. Its density is approximately 1.28 g/ml at 20 °C, while its water solubility is greater than 550 g/l at 20 °C.

Mechanism of Action: Diglycerin acts primarily as a humectant. Its four hydroxyl groups form hydrogen bonds with water molecules and thereby contribute to increasing the ability of the superficial layers of the skin to retain moisture. After application of a cosmetic product, Diglycerin contributes to increasing and maintaining the water content of the stratum corneum and to reducing sensations of dryness, tightness and

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roughness. Due to its pronounced hydrophilicity and physicochemical properties, significant dermal absorption of Diglycerin is considered unlikely. Its primary cosmetic function is therefore not to increase penetration of other active ingredients, but to maintain hydration and improve the sensory profile of the formulation.

Benefits:

- **Hydration:** attracts and retains water and contributes to a longer-lasting feeling of skin hydration.
- **Reduced sensation of dryness:** helps reduce sensations of dryness, tightness and roughness.
- **Softness and smoothness:** contributes to a pleasant sensory feel and improved skin softness.
- **Sensory profile:** may contribute to reducing pronounced tackiness in formulations with higher humectant content.
- **Compatibility:** combines well with other humectants and hydrophilic active ingredients.

Usage: Diglycerin is used as a humectant, skin-conditioning agent and solvent in aqueous formulations and emulsions. It may be added directly to the aqueous phase and combines well with glycerin, propanediol, Butylene Glycol, hyaluronic acid, panthenol, niacinamide and other hydrophilic active ingredients. The use concentration depends on the product type and desired sensory profile. According to data on actual cosmetic use, Diglycerin has been reported at concentrations of up to 28% in skin-cleansing products, up to 5% in leave-on face and neck products, up to 3% in products intended for sensitive areas such as the eye area, and up to 3.6% in lip products. These values represent reported use concentrations and are not universally recommended formulation ranges. For external use only.

Applications: Used in moisturizing serums, creams, lotions, milky emulsions, facial and body cleansing preparations, shampoos, hair conditioners, massage gels, lip products and other cosmetic formulations intended to increase hydration and improve the sensory profile.

Safety of Use: The Expert Panel for Cosmetic Ingredient Safety concluded that Diglycerin, Polyglycerin-3, Polyglycerin-6 and Polyglycerin-10 are safe for use in cosmetic products under the present practices of use and concentration. The assessment included available data on irritation, sensitization, genotoxicity and systemic exposure. The final CIR report for this group of ingredients was published in 2023.

Animal Testing: The raw material has not been tested on animals, provided this is

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confirmed by documentation from the specific supplier.

GMO: Non-GMO, provided this status is confirmed by appropriate manufacturer documentation.

Vegan: Contains no animal-derived components, provided the origin of the raw materials is confirmed by supplier documentation.

Country of Origin: Italy