

TECHNICAL DATA SHEET

Product Name: Dicaprylyl Ether

Raw Material Name: Dicaprylyl Ether

INCI Name: Dicaprylyl Ether

CAS Number: 629-82-3

Synonyms: Dicaprylyl Ether; Dioctyl Ether; Octyl Octyl Ether; 1-Octoxyoctane; Dicaprylether; Dioctylether; Octyl-octyl-Ether

Trade Names: Cetiol OE - BASF; SABODERM OE - SABO S.p.A.

Chemical Classification: Ether

Functional Category: Skin-conditioning agent; emollient; solvent

IUPAC Name: 1-Octoxyoctane

Description: Dicaprylyl Ether is a lightweight, low-viscosity emollient from the group of aliphatic ethers, valued in modern cosmetics for its highly pleasant sensory profile and high formulation flexibility. It is a clear liquid with a very mild odor that behaves distinctly "dry" on the skin, spreading very quickly and providing an immediate feeling of softness without a pronounced greasy or sticky film. This texture makes it particularly suitable for products intended for everyday use and formulations with high demands regarding application aesthetics. In cosmetic formulations, Dicaprylyl Ether acts as an emollient and skin-conditioning agent, improving product slip during application and promoting more even distribution of other lipophilic ingredients. Due to its low polarity and good compatibility with vegetable oils, esters and other lipophilic components, it is easily incorporated into a wide range of systems, from conventional emulsions to anhydrous products. It is particularly useful in lightweight creams, fluids, serums and emulgels, where it helps reduce the feeling of heaviness and improves the overall user experience. Its ether structure provides very good hydrolytic stability, which is why BASF particularly highlights it as a suitable ingredient for deodorants, antiperspirants and hair-removal products. In decorative cosmetics, it may contribute to better spreadability and a more even finish, while its ability to "lighten" heavier lipophilic components without loss of emollient effect represents one of its important formulation advantages.

Physicochemical Properties: Dicaprylyl Ether is a clear liquid of very low viscosity, allowing easy handling and simple incorporation into various cosmetic formulations. It is highly lipophilic and practically insoluble in water, while combining well with vegetable oils, ester emollients and other non-polar components. Thanks to its ether structure, it is characterized by good chemical stability and pronounced resistance to hydrolysis, which

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represents an important advantage in formulations where ester emollients may be less stable. At 20 °C it is liquid, with a specific gravity of approximately 0.807 and a viscosity of approximately 3.7 mPa·s. Its low viscosity and good spreadability explain its characteristic light and “dry” sensory profile on the skin.

Mechanism of Action: The mechanism of action of Dicaprylyl Ether is based on its ability to spread quickly and evenly over the skin surface, where it forms a thin and discreet emollient film. Due to its low viscosity and excellent spreadability, this film is not perceived as heavy or strongly occlusive, but gives the skin a feeling of softness, smoothness and comfort after product application. As a lipophilic ether, it reduces friction between the formulation and the skin during application, which is practically manifested as improved slip and more even application. At the same time, it facilitates the distribution of other lipophilic ingredients present in the formulation. CIR data indicate very low dermal absorption: in an in vitro study with undiluted Dicaprylyl Ether, the mean absorbed dose was approximately 0.30%. Its action is primarily physical and superficial, without pharmacological activity.

Benefits:

- Provides a lightweight emollient effect and softens the skin without a pronounced greasy feel.
- Improves product spreadability and facilitates even application to the skin.
- Contributes to a dry, silky and pleasant finish of the formulation.
- Reduces the feeling of heaviness in creams, serums and other lipid-based formulations.
- Improves the sensory properties of the finished product.
- Contributes to more even distribution of lipophilic ingredients within the formulation.
- Thanks to its ether structure, it shows very good hydrolytic stability.

Usage: Dicaprylyl Ether is used in cosmetic formulations as part of the oil phase or as a component of anhydrous systems. It may be added together with other lipophilic ingredients during the heating phase, but due to its good chemical and thermal stability it is also suitable for formulations without heating, where it is incorporated during cold processing. It homogenizes easily and does not require special technological conditions. In face and body creams and lotions, it may be used at approximately 3-10%, where it contributes to a light texture, improved spreadability and a dry finish, while lower concentrations are often used in serums, emulgels and lightweight fluids. In decorative cosmetics, it may improve slip and evenness of application, while in anhydrous products

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such as dry oils, oil serums and balms, it may be used at considerably higher levels as a means of reducing the heavy feel of vegetable oils and other lipophilic components. CIR data from 2019 on concentrations of use report Dicaprylyl Ether at up to 25% in body and hand products, while in baby products it was reported at up to 0.45%. These values represent reported cosmetic use concentrations and not universal recommended dosages. For external use only.

Safety of Use: The safety of Dicaprylyl Ether was evaluated as part of the CIR safety assessment of fatty ethers. The Expert Panel reviewed Dicaprylyl Ether together with seven other structurally related fatty ethers and concluded that these ingredients are safe in cosmetic products under the current conditions and concentrations of use. Available data indicate low acute toxicity and very low dermal absorption, while genotoxicity tests did not indicate mutagenic or genotoxic potential. In animal studies, the undiluted substance could cause mild and transient skin and eye irritation, which is why it is not justified to describe it as completely non-irritating under all conditions. At the same time, a human patch test of a product containing 15% Dicaprylyl Ether was included in the CIR tolerability assessment. Based on the total available data, CIR concluded that Dicaprylyl Ether is safe under the current conditions of cosmetic use and at the concentrations described in the assessment.

Natural or Synthetic Ingredient: Dicaprylyl Ether is a technologically manufactured, chemically defined ingredient obtained through a controlled chemical reaction. Although the starting fatty components may be of plant origin, the final molecule does not occur in nature in the same form and is therefore not considered an unprocessed natural ingredient. In the cosmetics industry it is often described as an emollient based on raw materials of plant origin, while COSMILE classifies its origin as synthetic/plant.

Animal Testing: The substance has not been tested on animals.

GMO: Non-GMO

Vegan: Contains no animal-derived components

Raw Material Origin: EU