

TECHNICAL DATA SHEET

Product Name: Dicaprylyl Carbonate

Raw Material Name: Dicaprylyl Carbonate

INCI Name: Dicaprylyl Carbonate

CAS: 1680-31-5

Synonyms: Dicaprylyl Carbonate; Dioctyl Carbonate; Carbonic Acid Dioctyl Ester; Carbonic Acid, Dicaprylyl Ester

Registered Trade Name: Cetiol CC - BASF

Chemical Classification: Carbonate ester

Functional Category: Skin-conditioning agent; emollient.

IUPAC Name: Dioctyl carbonate

Molecular Formula: C₁₇H₃₄O₃

Molecular Weight: 286.4 g/mol

Description: Dicaprylyl Carbonate is a lightweight, "dry" emollient from the group of carbonate esters, widely used in modern cosmetic formulations because of its very pleasant sensory profile. It spreads quickly and easily on the skin and leaves a silky smooth feel without a pronounced greasy or sticky film, making it particularly suitable for everyday skin-care formulations and products where a light and elegant finish is desired. In skin-care formulations it improves the spreadability of the oil phase and contributes to more even distribution of lipophilic ingredients, gives the formulation better slip and reduces the heavy feel of richer oils and butters. It is particularly valued in facial-care products, where it allows the development of a characteristic "dry" finish and silky after-feel. Dicaprylyl Carbonate is also frequently used as an alternative to lighter silicone emollients. In decorative cosmetics it contributes to better spreadability and more even distribution of pigments, while in sun-care products it is particularly useful because of its good ability to dissolve certain crystalline UV filters. Due to its light sensory profile, it is suitable for different skin types, including formulations intended for oily and combination skin, and it may also be used in products intended for sensitive regions, such as the eye area, subject to appropriate assessment of the finished formulation. Dicaprylyl Carbonate is a formulation-friendly emollient that enables the development of modern creams, lotions, serums, emulgels, sun-care products and decorative cosmetics with a light and sophisticated sensory profile.

Physicochemical Properties: Dicaprylyl Carbonate is a carbonate ester consisting of

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two lipophilic alkyl chains linked by a carbonate functional group. This structure gives it pronounced lipophilicity, low viscosity and excellent spreadability. At room temperature it is a clear, colorless to nearly colorless liquid without a pronounced characteristic odor. It is practically insoluble in water but combines well with various oils, ester emollients and other lipophilic components. Its low viscosity allows easy incorporation into formulations and contributes to a light, non-greasy sensory profile, while its good ability to dissolve lipophilic components is particularly useful in formulations containing crystalline UV filters.

Mechanism of Action: Dicaprylyl Carbonate acts primarily as an emollient. After application it spreads evenly over the skin surface and forms a thin emollient film that smooths the skin surface and reduces the feeling of roughness. Due to its low viscosity and good spreadability, it reduces friction during product application and gives a characteristic silky and velvety feel without heaviness. As a lipophilic solvent, it may contribute to better distribution of certain oil-soluble ingredients within the formulation. Its action is primarily superficial and formulation-related, without the need to attribute any specific biological or pharmacological effect to it.

Benefits:

- Effectively softens and smooths the skin surface.
- Spreads quickly and leaves a light, non-greasy feel.
- Gives products a silky and velvety sensory profile.
- Improves spreadability of the oil phase and lipophilic ingredients.
- Suitable as an alternative to lighter silicone emollients.

Usage: Dicaprylyl Carbonate is used as part of the oil phase in emulsions or as a direct component of anhydrous formulations. It can be added during the heating phase together with other oils and emollients, but is also suitable for cold-process formulations when the manufacturing process allows. It homogenizes easily and does not require special processing 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 of approximately 1-5% are often used in serums, emulgels and lightweight fluids. In decorative cosmetics such as liquid foundations, BB and CC creams and lip products, it may be used at higher levels when improved slip, pigment dispersion and even application are required. In anhydrous products such as oil serums, dry oils and balms, it may also be used at considerably higher concentrations as a lightweight emollient and to reduce the greasy feel of heavier oils. CIR data show that Dicaprylyl Carbonate has been reported in leave-on products at concentrations up to 34.5%, but this value represents the highest reported concentration of cosmetic use and

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not a universal recommended dosage. For external use only.

Applications: Dicaprylyl Carbonate is used in creams, lotions, serums, emulgels, face and body oils, sun-care products, decorative cosmetics, lip products and other formulations in which a light, dry and silky sensory profile is desired.

Safety of Use: The Cosmetic Ingredient Review (CIR) evaluated Dicaprylyl Carbonate as part of the safety assessment of dialkyl carbonates used in cosmetics. The CIR Expert Panel concluded that the ingredients in this group, including Dicaprylyl Carbonate, are safe under current conditions and concentrations of cosmetic use when products are formulated to be non-irritating. For Dicaprylyl Carbonate, use in leave-on products was reported at concentrations up to 34.5%. Available data did not indicate genotoxic potential, while irritation data showed that the concentration and formulation of the finished product should be taken into account in the safety assessment. Therefore, the safety of a specific finished product should be assessed in relation to concentration, site of application and the complete formulation composition.

Natural or Synthetic Ingredient: Dicaprylyl Carbonate is a technologically manufactured ingredient that may be obtained from raw materials of plant origin. The molecule itself is produced through a controlled chemical reaction and is therefore not considered an unprocessed natural ingredient. In cosmetic practice it is frequently used as a plant-origin-based alternative to certain synthetic emollients and silicones. COSMILE classifies its origin as synthetic/plant. For the commercial product Cetiol CC, any COSMOS, ECOCERT or other status should be stated according to the current documentation of the specific manufacturer and not as a general property of all Dicaprylyl Carbonate raw materials.

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

GMO: Non-GMO

Vegan: Contains no animal-derived components

Raw Material Origin: EU