Import and distribution for Serbia: Farmadria DOO
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TECHNICAL DATA SHEET

Raw material name: Coco Betaine

INCI name: Cocamidopropyl Betaine, Sodium Chloride, Sodium Benzoate, Aqua

CAS: 61789-40-0, 7647-14-5, 532-32-1, 7732-18-5

Synonyms: 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., hydroxides, inner salts; NorfoxCapb; 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., inner salts; N-Cocamidopropyl-N,N-dimethylglycine inner salt; Cocamidopropyl betaine

Chemical classification: Betaine

Functional category: Surfactant ~ Cleansing agent ~ Foam booster, Viscosity modifier, Antistatic agent, Skin and hair conditioning agent,

IUPAC name: 2-[3-(dodecanoylamino)propyl-dimethylazaniumyl]acetate

Description: Cocamidopropyl betaine is a mild amphoteric surfactant obtained from coconut fatty acids, most commonly lauric acid, and dimethylaminopropylamine through a reaction with monochloroacetic acid. Although it is considered a plant-derived ingredient, the final molecule is the result of a complex chemical process. In personal care formulations, it is used because of its ability to create stable, rich foam while reducing the potentially irritating effects of anionic surfactants such as sodium lauryl sulfate. Due to its amphoteric structure, it behaves differently depending on the pH of the medium, which provides good compatibility with different types of surfactants. In an acidic medium, it exhibits mildly cationic properties, while in an alkaline medium it behaves more like an anionic surfactant. This adaptability enables its broad use in rinse-off skin and hair products, including shampoos, shower gels, facial foams and products for children. On contact with the skin, it acts gently and does not impair the skin barrier, while on the hair it leaves a smooth feel and reduces static electricity. It does not clog pores or dry out the skin, which makes it suitable for formulations intended for sensitive skin. In products, it often serves as an auxiliary thickener because it contributes to formulation viscosity without requiring additional thickeners.

Note: Cocamidopropyl betaine and Coco betaine are not the same compounds, although both are derived from coconut oil and belong to the amphoteric surfactant group. Cocamidopropyl betaine is a chemically well-defined compound, while Coco betaine is a **commercial name** that is often used as a synonym and may also refer to other similar derivatives. In practice, most formulations marketed under the name Coco betaine actually contain Cocamidopropyl betaine.

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Mechanism of action: Cocamidopropyl Betaine (CAPB) is an amphoteric surfactant, meaning that it is a compound containing both positively and negatively charged groups within the same molecule. Its structure can be divided into two main parts: the amide part and the betaine part. The amide part is formed through the reaction of lauric acid, derived from coconut oil, with dimethylaminopropylamine. Lauric acid contains a long hydrocarbon chain, while dimethylaminopropylamine provides an amino group that reacts with the carboxyl group of lauric acid to form an amide bond. The betaine part is formed by adding a betaine group to the amide part. The betaine group contains a positively charged quaternary ammonium ion and a negatively charged carboxylate group. The hydrophobic part (the hydrocarbon chain) enables the molecule to attract and emulsify oils and fats, while the hydrophilic part (the betaine group) enables the molecule to dissolve in water and form stable foam. CAPB therefore acts as a compound that reduces the surface tension of water while enabling foam formation. It acts as a mild and effective surfactant suitable for various cosmetic and hygiene products. It is compatible with anionic, nonionic and cationic surfactants and may also be used as a primary surfactant. In addition to cleansing and foam formation, it increases viscosity and provides effective antistatic and conditioning properties. It is readily soluble in water. The pH of a 10% aqueous solution is 5-6. It contains 30% active substance, with the remaining 70% consisting of water. It is a yellow liquid with no odour or only a very mild odour.

Benefits:

- Provides gentle yet effective cleansing without drying out the skin.
- Creates rich and stable foam that improves the user experience.
- Increases product viscosity, providing a more pleasant texture.
- Leaves the skin and hair soft and smooth after rinsing.
- Facilitates combination with other ingredients in the formulation.
- Improves the effectiveness of other surfactants in the product.
- Reduces potential irritation caused by harsher surfactants.
- Helps control static electricity in the hair and facilitates styling.

Directions for use: Cocamidopropyl betaine is used in cosmetic formulations as a secondary surfactant that boosts foam, reduces irritation and contributes to viscosity. It is most commonly added to the aqueous phase during production and may be incorporated either before or after the main anionic surfactant, depending on the desired texture and foam stability. It is often used in combination with sodium laureth sulfate. A

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ratio of 3:1 anionic surfactant to betaine is commonly used. In this combination, it increases viscosity and improves foam formation. It may also be blended at a 1:1 ratio. In shampoos, it is generally used at concentrations of 4-7%, where it contributes to rich foam formation and improves product spreadability. Similar concentrations are used in shower gels and liquid soaps, while slightly lower concentrations, usually 2-5%, are used in facial cleansing products to maintain a mild formulation suitable for sensitive skin. In products for children and intimate care products, it is used at the lowest recommended concentrations, often in combination with nonionic surfactants, to further reduce irritation potential. The total concentration in the formulation depends on the presence of other surfactants, the desired viscosity and the product type. It is important to note that Cocamidopropyl betaine is used very rarely and at very low concentrations in leave-on products, if it is included at all.

Safety of use: In its 2012 report, the CIR (Cosmetic Ingredient Review) confirmed that Cocamidopropyl betaine is safe for use in cosmetic products at concentrations of up to 10% in rinse-off preparations for the skin or hair. Although it is also used at higher concentrations, the safety assessment panel noted that adverse reactions are rare when the ingredient is used in rinse-off formulations. The CIR did not issue an explicit prohibition for leave-on products, but caution and significantly lower concentrations are recommended because of the potential for irritation and allergic contact dermatitis, particularly due to traces of impurities such as amidoamine and dimethylaminopropylamine that may remain after the manufacturing process. In conclusion, the CIR considers Cocamidopropyl betaine safe when used appropriately, particularly in rinse-off products and when raw material purity is controlled.

Natural or synthetic ingredient: Cocamidopropyl betaine is classified as a synthetic ingredient of plant origin. The starting material is coconut oil, specifically its fatty acids, but the final molecule is obtained through a series of chemical reactions, including amidation and quaternisation, and therefore cannot be considered a natural compound. Despite marketing claims that it is 'natural', it is not a natural ingredient according to strict chemical classification, but a chemically modified plant-derived ingredient, which places it among synthetic yet biodegradable surfactants.

Animal testing: The substance has not been tested on animals

GMO: Non-GMO

Raw material origin: Italy