

TECHNICAL DATA SHEET

Product Name: Maltobionic Acid

INCI Name: Maltobionic Acid

CAS Number: 534-42-9

Chemical Classification: Carbohydrate

Functional Category: pH Regulator/Buffer Agent

IUPAC Name: 4-O- α -D-Glucopyranosyl-D-gluconic acid

Description: Maltobionic acid is a polyhydroxy acid (PHA) derived from maltose and gluconic acid. As a PHA, it offers gentle exfoliation by weakening the bonds between keratinocytes in the stratum corneum, enabling the removal of dead skin cells. Compared to alpha hydroxy acids (AHAs), it has a larger molecular weight, leading to slower penetration into deeper skin layers and primarily surface-level action, reducing the risk of irritation. The skin becomes smoother and more even-toned. Maltobionic acid acts as a humectant due to its high number of hydroxyl groups ($-OH$), attracting and binding water molecules from the environment or deeper skin layers to the epidermis. This enhances skin hydration, elasticity, and softness while supporting the skin's natural barrier, making it particularly suitable for sensitive skin types. Its antioxidant properties, attributed to gluconic acid, allow it to neutralize free radicals that damage skin cells and accelerate aging. This is particularly beneficial in protecting skin from UV radiation and pollution, preserving collagen and elastin—the proteins vital for skin firmness and elasticity. Maltobionic acid also stimulates skin renewal by removing dead cells and improving hydration, promoting cellular regeneration in the basal epidermal layer, which contributes to an even skin tone and texture. Its mild nature makes it suitable for individuals with skin concerns such as rosacea or atopic dermatitis. As a chelating agent, it binds metal ions (e.g., iron and copper) that can cause oxidative stress in formulations and on the skin. This dual action stabilizes cosmetic products and provides additional protection against potential harmful effects of these ions. It is increasingly used in moisturizers, serums, and exfoliating products for daily use, delivering visible results with minimal risk of adverse effects.

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Benefits:

- Gently removes dead skin cells without irritation.
- Provides intense hydration and maintains skin elasticity.
- Neutralizes free radicals and protects against oxidative stress.
- Improves texture and promotes even skin tone.
- Suitable for sensitive skin, minimizing the risk of irritation.
- Stabilizes cosmetic formulations by chelating metal ions.
- Encourages skin regeneration for a healthier appearance.
- Protects collagen and elastin from UV radiation and pollution.

Usage: Maltobionic acid is used in various concentrations depending on the product type and formulation purpose: Moisturizers and serums for daily care: Recommended concentrations range from 2% to 4%, providing optimal hydration and antioxidant protection without irritation. Exfoliating products: Concentrations between 4% and 8% offer gentle yet effective exfoliation, particularly suitable for sensitive skin. Intensive skin regeneration products (e.g., night creams or treatment masks): Concentrations up to 10%, often with soothing ingredients to avoid adverse reactions. Formulations should maintain a pH range of 3.5 to 4.5 to ensure acid stability and efficacy. Due to its mild nature, products containing maltobionic acid can be used daily without the need for special skin preparation, making them ideal for sensitive and problematic skin types.

Animal Testing: Not tested on animals

GMO: Non-GMO

Vegan: Does not contain animal-derived components

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