

TECHNICAL DATA SHEET

Product Name: Mandelic Acid

INCI Name: Mandelic Acid

CAS: 90-64-2

Chemical Classification: Carboxylic Acid/Derivative

Functional Category: Skin Conditioning Agent, Exfoliant/Peeling Agent

IUPAC Name: 2-hydroxy-2-phenylacetic acid

Description: Mandelic acid belongs to the group of alpha-hydroxy acids (AHAs). It is derived from bitter almonds (*Prunus amygdalus* var. *amara*), specifically from a compound known as amygdalin. The isolation process involves the hydrolysis of amygdalin, releasing mandelic acid. Due to its natural origin, it is classified as a natural acid. Compared to other alpha-hydroxy acids like glycolic acid, mandelic acid has a larger molecular weight, allowing slower and more even penetration into the skin. This slower penetration reduces the risk of irritation, making it gentler and more suitable for sensitive skin. This property is particularly valuable for individuals who cannot use stronger acids due to excessive irritation, redness, or dryness. Mandelic acid is recommended for rosacea-prone skin due to its mild action that does not trigger additional redness or irritate sensitive skin. As an exfoliant, mandelic acid chemically breaks down the bonds between dead cells on the skin's surface. This process facilitates their removal, resulting in cleaner, smoother, and more even-toned skin. Unlike physical scrubs, which remove dead cells through mechanical friction, mandelic acid acts on a molecular level. By eliminating dead cells, it also enhances the absorption of other active ingredients in cosmetic products, increasing their effectiveness. Beyond its exfoliating properties, mandelic acid impacts melanin synthesis, the pigment responsible for the color of skin, hair, and eyes. Excessive melanin production in melanocytes can lead to hyperpigmentation, such as dark spots, melasma, or sun-induced discoloration. Mandelic acid inhibits enzymes responsible for melanin production, like tyrosinase, thereby reducing melanin synthesis. The result is a more even skin tone and diminished visibility of dark spots and discoloration. Due to these properties, mandelic acid is a common ingredient in skin-brightening products, especially for individuals with post-inflammatory hyperpigmentation from acne or sun damage. Recent studies indicate that peels with high concentrations of

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.

TECHNICAL DATA SHEET

mandelic acid (30% or more) can increase sebum production. While this trait is not ideal for oily skin, it is beneficial for dry skin, as it can contribute to additional hydration. Such treatments provide dual benefits for individuals with discoloration issues and dry skin. Mandelic acid is chemically stable but should be stored in a cool, dry place away from direct light and moisture to ensure maximum efficacy. In its pure form, it appears as a white, crystalline powder soluble in water and organic solvents such as ethanol.

Melting Point: 119°C

Water Solubility: 15.87 g/100 mL

Racemic Mixture: Known as paramandelic acid

Benefits:

- Removes dead skin cells and promotes cell renewal, leaving skin smooth and radiant.
- Reduces fine lines, wrinkles, and pigmentation.
- Contributes to skin hydration and elasticity.
- Effectively treats acne due to its antibacterial and anti-inflammatory properties.
- Clears pores and reduces the visibility of acne scars.
- Brightens dark spots and age spots, minimizing hyperpigmentation by inhibiting melanin.
- Suitable for sensitive skin due to its larger molecules, which penetrate the skin more slowly.
- Soothes irritated and red skin with its anti-inflammatory properties.

Usage Instructions: The use of mandelic acid in formulations depends on the product's purpose, with concentration and application method carefully tailored to ensure efficacy and safety. For daily skincare products like toners or serums for gentle exfoliation, mandelic acid is typically used in concentrations of 5% to 10%. These products generally have a pH range of 3 to 4, enabling optimal acid activity without causing irritation. Recommended use is once daily, with mandatory sunscreen protection during the day. For more intensive peeling treatments, such as chemical peels, mandelic acid is used at higher concentrations, usually between 20% and 40%. These formulations are intended for professional use and require expert handling. Treatments are applied periodically under controlled conditions to avoid skin barrier damage. In acne or hyperpigmentation products, mandelic acid shows excellent results due to its antibacterial and depigmentation properties. Concentrations vary but are typically within 5% to 15%, depending on

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.

TECHNICAL DATA SHEET

the formulation and desired effect.

When working with mandelic acid, stabilizing the product is critical, as the acid can lose effectiveness if the formulation is not balanced in terms of pH and other components. Avoid combining it with other irritating ingredients, such as strong acids or retinoids, to minimize the risk of irritation.

Source Material: Bitter Almond

GMO: Non-GMO

Vegan: Contains no animal-derived components

Country of Origin: China

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.