

TECHNICAL DATA SHEET

Beta Carotene Powder

Product Name: Beta Carotene Powder 10%

INCI Name: *Beta-Carotene, Maltodextrin, Acacia Senegal Gum, Ascorbyl Palmitate, Silica, Tocopherol*

CAS No.: 7235-40-7, 9050-36-6, 9000-01-5, 137-66-6, 7631-86-9, 59-02-9

Synonyms: Beta-Carotene, Betacarotene, Beta Carotenum, E160a, Food Orange 5, Gelbfarbstoff, Natural Brown 5, Natural Yellow 26, L-Orange 3, β , β -Carotene, Provitamin A, Carotene

IUPAC Name: 1,1'-(3,7,12,16-Tetramethyl-1,3,5,7,9,11,13,15,17-octadecanonaene-1,18-diyl)bis[2,6,6-trimethylcyclohexene]

Product Quality: Standardized beta-carotene powder containing **10% natural beta-carotene**.

Description:

Beta-carotene powder is a natural pigment recognized for its vibrant orange color and powerful antioxidant properties. It is obtained by extraction from plant sources such as carrots, sweet potatoes, and certain species of algae.

The 10% beta-carotene powder is technologically processed to be **water-dispersible**. In this form, beta-carotene is microencapsulated and distributed within carrier materials such as maltodextrin, acacia gum, and other stabilizing agents, allowing the powder to disperse uniformly in water as a fine suspension. Although the dispersion visually resembles a true solution, the beta-carotene remains present as microscopic particles or microdroplets suspended within the aqueous phase.

This specialized form enables precise color adjustment while simultaneously providing antioxidant protection to the skin, particularly in products designed for skin exposed to UV radiation and environmental stressors. Microencapsulation also protects the pigment against degradation caused by light, oxygen, and heat, thereby improving product stability and extending shelf life.

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Owing to these characteristics, water-dispersible beta-carotene has become an important ingredient in a wide variety of modern cosmetic formulations.

Benefits:

- Provides powerful antioxidant protection by neutralizing free radicals and helping reduce premature skin aging.
- Supports protection against UV-induced oxidative stress when used alongside UV filters.
- Helps soothe the skin by reducing the appearance of irritation and inflammation.
- Contributes to skin hydration and promotes a healthy-looking complexion.
- Provides a natural yellow-to-orange color to cosmetic formulations.
- Improves formulation stability through microencapsulation technology.
- Suitable for a wide range of water-based cosmetic applications.

Directions for Use:

In cosmetic formulations, **10% beta-carotene powder** is incorporated into the **water phase** under vigorous stirring or homogenization to ensure uniform particle distribution throughout the formulation.

Although the dispersion appears to be a solution, beta-carotene remains suspended as microscopic particles. To minimize sedimentation during storage, especially in low-viscosity products such as toners, gels, and facial mists, the use of additional stabilizers or rheology modifiers (e.g., xanthan gum) is recommended.

Typical use levels range from **0.05% to 1.0%**, depending on the desired color intensity and antioxidant performance.

When formulating, attention should be paid to its coloring capacity, as beta-carotene may impart an intense orange hue to the product and, at higher concentrations, may temporarily stain the skin.

In emulsions, it may be incorporated either into the water phase before emulsification or during the cooling phase, provided that it has been properly dispersed beforehand.

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Beta-carotene is sensitive to light, oxygen, and elevated temperatures. For maximum stability, formulations should be protected from prolonged UV exposure, supplemented with antioxidants such as **tocopherol**, and packaged in opaque or light-protective containers.

Solubility of β -Carotene in Water and Oil:

The solubility of β -carotene depends on both its chemical structure and physical form.

98% Beta-Carotene is an almost pure crystalline or powdered material. It is **insoluble in water** and cannot form stable aqueous dispersions. It dissolves only in oils, fats, and selected organic solvents such as ethanol, hexane, acetone, and ethyl acetate. In cosmetic formulations, it is incorporated into the oil phase or dissolved in vegetable oils before emulsification.

By contrast, **1%, 10%, and 20% beta-carotene powders** are specially manufactured as **water-dispersible grades**. These products contain carrier materials such as maltodextrin, starch, or natural gums, enabling uniform dispersion in water. However, the beta-carotene does not dissolve at the molecular level; instead, it remains suspended as microscopic particles or microdroplets. Consequently, these systems are technically classified as **stable dispersions (suspensions)** rather than true solutions.

In summary, low-concentration water-dispersible beta-carotene powders are designed for aqueous cosmetic formulations, whereas highly concentrated beta-carotene (98%) remains exclusively oil-soluble and should only be incorporated into the oil phase.

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Animal Testing:

This ingredient has **not been tested on animals.**

GMO Status:

Non-GMO.

Vegan:

Contains no ingredients of animal origin.

Storage and Shelf Life:

Store in a cool, dry place protected from light. When stored under recommended conditions, the product has a **shelf life of 2 years.**

Country of Origin: China.