

TECHNICAL DATA SHEET

Product Name: Beta-Glucan 90% powder

INCI name: Beta-Glucan

CAS: 9051-97-2

Chemical classification: Polysaccharide; β -glucan (polymer of D-glucose linked by β -1,3 and β -1,6 glycosidic bonds); natural biopolymer of plant or microbial origin

Functional category: Humectant; active dermal ingredient; film former; skin-conditioning agent; skin barrier restoring ingredient

Description: Beta-glucan is a natural high-molecular-weight polysaccharide used as an active cosmetic ingredient with pronounced moisturizing, soothing, and regenerative effects on the skin. It is most commonly obtained by extraction from the cell walls of yeast, oats, or other natural sources. Beta-glucan derived from mushrooms such as Shiitake (*Lentinula edodes*), Reishi (*Ganoderma lucidum*), Maitake (*Grifola frondosa*), *Agaricus blazei* (*Agaricus subrufescens*), and Chaga (*Inonotus obliquus*) exhibits stronger biological activity compared with oat-derived beta-glucan, providing additional benefits in supporting immune responses and enhancing the regenerative capacity of the skin. After extraction, purification processes are carried out to remove proteins, lipids, and other accompanying components, resulting in a raw material of high purity and stability. In its final form, beta-glucan appears as a white to slightly yellowish powder without a pronounced odor, which disperses in water and forms a stable hydrophilic system. In cosmetic formulations, beta-glucan is known for its ability to improve skin hydration. Its structure enables binding and retention of water, helping the skin remain hydrated, soft, and elastic for longer periods. On the skin surface it can form a thin protective film that reduces transepidermal water loss and contributes to a smooth and comfortable skin feel after product application. Beta-glucan also has soothing properties. It can help reduce redness, burning sensations, and irritation, which is why it is frequently used in products intended for sensitive skin. Due to these properties it is suitable for formulations intended for sensitive areas, such as the areas around the eyes, as well as for products used after sun exposure or after cosmetic and dermatological treatments. Another important characteristic of beta-glucan is its support for skin barrier restoration. This ingredient helps stabilize the protective layer of the skin, making it more resistant to external stressors and less prone to irritation. For this

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reason, it is often used in products intended for dry, sensitive, and reactive skin. In formulations, beta-glucan is compatible with a wide range of cosmetic ingredients and can be used in different types of products such as serums, gels, creams, lotions, and facial masks. It is most commonly added to the aqueous phase of formulations, where it disperses easily and contributes to a pleasant product texture.

Physicochemical properties: Beta-glucans isolated from mushrooms such as *Lentinula edodes*, *Ganoderma lucidum*, *Grifola frondosa*, *Agaricus subrufescens*, and *Inonotus obliquus* structurally belong to the group of β -(1 3)-D-glucans with β -(1 6) branching. This molecular organization influences their behavior in water and explains their limited solubility. These polysaccharides have high molecular weight and a pronounced degree of branching. In aqueous systems they can form three-dimensional helical structures. In natural extracts they are often present in complexes with proteins, which further affects their physicochemical characteristics. Due to this structure, beta-glucans in their natural form are generally insoluble or only slightly soluble in water. In cold water they do not dissolve but instead form a suspension with visible particles. At elevated temperatures, approximately between 60 and 90 °C, swelling of the polysaccharide structure occurs together with partial dispersion, but without the formation of a completely clear solution. As a result, a turbid colloidal system is formed.

Benefits:

- Acts as a humectant, attracting and retaining moisture, helping hydrate the skin and prevent dryness.
- Neutralizes free radicals and protects collagen and structural skin tissues from damage.
- Stimulates collagen production, improving skin elasticity and firmness while reducing the appearance of wrinkles.
- Helps restore damaged skin and accelerates the natural healing process.
- Strengthens the skin's immune response and increases resistance to environmental stressors.
- Provides a certain level of protection against UV radiation and reduces damage caused by sun exposure.
- Improves the texture of cosmetic formulations, making them more pleasant to use.

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Method of use: Beta-glucan powder should first be mixed with glycerin before being introduced into a formulation. This step ensures uniform wetting of the powder particles and prevents the formation of lumps that may occur when the powder is added directly to water. Mixing beta-glucan with glycerin produces a homogeneous dispersion that can be more easily incorporated into the aqueous phase of the formulation. After preparing the predispersed mixture, it is gradually added to the aqueous phase with stirring. In water, beta-glucan begins to swell and forms a colloidal dispersion. In emulsion systems this phase is subsequently combined with the oil phase to form a stable emulsion. This method ensures uniform distribution of beta-glucan within the formulation and contributes to the stability of the final product. The recommended concentration of beta-glucan in cosmetic formulations is approximately 0.04% to 0.35%. This concentration range allows the achievement of moisturizing, soothing, and protective effects on the skin without unnecessarily increasing formulation viscosity. In creams, lotions, and serums for daily skin care, beta-glucan is typically used at concentrations of approximately 0.05–0.2%, where it contributes to skin hydration, strengthening of the skin barrier, and reduction of irritation. In formulations intended for sensitive or irritated skin, the concentration may approach the upper limit of the recommended range, approximately 0.2–0.35%, in order to achieve a stronger soothing and regenerative effect. In facial masks or intensive moisturizing formulations, beta-glucan is also most often used at concentrations close to 0.3%, as relatively small amounts of this ingredient can provide a significant moisturizing and skin-protective effect. Beta-glucan combines well with other active ingredients such as hyaluronic acid, ceramides, and antioxidants, further enhancing hydration and skin barrier restoration effects.
For external use only.

Animal testing: In accordance with current European regulations (Regulation (EC) No. 1223/2009 on cosmetic products), the substance has not been tested on animals. The safety assessment of the raw material is based on available toxicological data, scientific literature, and validated alternative testing methods (in vitro and in silico). In silico refers to testing and assessment methods carried out using computer models and simulations rather than laboratory testing on living organisms (in vivo) or on cell cultures (in vitro). This note confirms compliance with the ban on animal testing and is provided solely for informational purposes regarding the further use of the raw material in cosmetic formulations.

GMO: Non-GMO

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