

TECHNICAL DATA SHEET

Product Name: Hydrolyzed Wheat Gluten

INCI: Water, Hydrolyzed Wheat Gluten, 1,2-dihydroxypentane, (+)-Arabinogalactan, 3-o-Ethyl Ascorbic Acid, Benzyl alcohol, Potassium sorbate, Sodium benzoate

CAS: 7732-18-5, 100684-25-1, 5343-92-0, 9036-66-2, 86404-04-8, 100-51-6, 24634-61-5, 532-32-1

Chemical Classification: Proteins/derivatives

Functional Category: Skin and hair conditioning agent

Description: Hydrolyzed wheat gluten is a functional cosmetic ingredient derived from plant sources, obtained through controlled enzymatic hydrolysis of wheat gluten proteins. This process breaks down high molecular-weight protein structures into short-chain peptides and free amino acids, significantly increasing their bioavailability and affinity for binding to the surface layers of skin and hair. Such a composition provides high nutritional value, including essential amino acids that support cellular regeneration and structural integrity of keratinous tissues. In skin care formulations, this ingredient acts as a humectant and emollient. By attracting external moisture and retaining hydration within the stratum corneum, it aids in maintaining skin hydration and elasticity. Its hygroscopic properties reduce sensations of tightness, dryness, and irritation, while the film it forms on the skin surface protects against transepidermal water loss and external stressors such as pollution and low humidity levels. This protective barrier makes the skin more even-toned, smoother, and resilient, reducing the visibility of fine lines and superficial imperfections. It is suitable for dry, sensitive, and reactive skin preparations. In hair care cosmetics, hydrolyzed wheat gluten serves as an effective film-forming and conditioning agent. Its ability to adhere to damaged areas of the cuticle supports hair fiber integrity, reduces friction between strands, and enhances hair resistance to mechanical and chemical damage. By forming a protective layer around hair strands, it retains internal moisture, providing smoothness, shine, and elasticity. The presence of peptides and amino acids further nourishes hair, strengthens follicles, and contributes to thicker, healthier-looking hair. The raw material is available as a clear, amber-colored aqueous liquid with a characteristic natural scent. It is fully water-soluble and stable across a broad pH range (4.0–7.0), making it suitable for various formulation types, including shampoos, conditioners, masks, serums, lotions, and

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creams. It is compatible with most anionic, amphoteric, and nonionic surfactants, as well as hyaluronic acid, urea, glycerin, and botanical extracts. Due to its natural origin, high biological compatibility, and efficacy, hydrolyzed wheat gluten is highly valued in modern, natural, vegan, and dermatologically oriented cosmetics.

Mechanism of Action: Wheat gluten and wheat protein are distinct ingredients derived from wheat, differing in composition and application. Wheat gluten consists of two main components—gliadin and glutenin—responsible for its elastic properties. In contrast, wheat protein encompasses a broader spectrum of proteins found in wheat, including gluten but also other proteins without elastic properties. Consequently, hydrolyzed wheat gluten is used when moisture retention and elasticity are desired, whereas hydrolyzed wheat protein provides broader nutritional benefits for skin and hair.

Benefits:

- Forms a protective film aiding moisture retention in skin and hair.
- Enhances product texture, imparting smoothness and creaminess.
- Strengthens hair, increasing resistance to breakage and damage.
- Softens hair, adds shine, and facilitates combing.
- Offers protection against harmful external factors, including UV radiation.
- Exhibits antioxidant activity, protecting skin from free radicals.
- Improves skin elasticity and firmness.
- Soothes irritation and reduces skin redness.
- Generally does not trigger reactions in gluten-sensitive individuals.

Application Instructions: Hydrolyzed wheat gluten is widely utilized in contemporary cosmetic formulations due to its protein structure, hygroscopic properties, and pronounced bioaffinity towards keratinous and epidermal tissues. Usage varies depending on product type, functional role, and desired effects. In hair cleansing and care products, including shampoos, conditioners, and masks, concentrations typically range from 0.5% to 5%. Lower concentrations meet basic hydration and cuticle protection needs, while higher levels yield enhanced conditioning effects for dry, damaged, and chemically treated hair. Ideally added in the aqueous phase at temperatures below 40°C during the final stages of formulation to preserve peptide integrity. Leave-in hair products, such as serums and sprays, usually employ lower concentrations up to 2%. Here, hydro-

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lyzed wheat gluten strengthens hair fibers, increasing resilience without causing heaviness or stickiness. When combined with gentle humectants like glycerin, panthenol, or plant extracts, it enhances elasticity and protects hair from moisture loss. In dermal emulsions, including creams, lotions, and body milks, it is generally used at concentrations not exceeding 2%. Its role here is as a supportive moisturizer enhancing epidermal water retention without compromising emulsion stability. It functions effectively in oil-in-water systems and is compatible with numerous emulsifiers, including nonionic and mild ester emulsifiers, as well as polyglyceryl derivatives. It is incorporated during the cooling phase once the system stabilizes thermally, ensuring functional activity preservation. In water-based formulations such as toners, gels, essences, and facial serums, concentrations range typically between 0.2% and 1%, providing a mild yet effective moisturizing effect and enhancing perceived skin smoothness. It pairs well with hyaluronic acid, urea, sodium PCA, and botanical extracts, provided system pH remains between 4.0 and 7.0. Values below 4.0 may lead to protein denaturation, reducing functionality. Similarly, combinations with strong oxidizing agents like hydrogen peroxide should be avoided. Thanks to its exceptional compatibility, stability within defined pH parameters, and ease of integration into final formulation phases, hydrolyzed wheat gluten ranks among reliable, multifunctional ingredients suitable for diverse product categories.

Natural or Synthetic: Hydrolyzed wheat gluten is a natural ingredient derived from wheat proteins obtained from wheat grain. Processed via enzymatic or acid hydrolysis, it remains classified as a naturally derived ingredient, processed without altering its fundamental nature.

Important Note: Despite originating from gluten fractions, hydrolyzed wheat gluten does not contain gluten in an immunologically reactive form and is suitable for use in products intended for individuals with celiac disease or gluten intolerance.

Animal Testing: Not tested on animals

GMO: Non-GMO