

## TECHNICAL DATA SHEET

### Acetyl Octapeptide-3

**Product Name:** Acetyl Octapeptide-3

**INCI Name:** Water, Glycerin, Acetyl Octapeptide-3, (+)-Arabinogalactan, 3-O-Ethyl Ascorbic Acid, Phenoxyethanol, Ethylhexylglycerin

**CAS:** 7732-18-5, 56-81-5, 868844-74-0, 9036-66-2, 86404-04-8, 122-99-6, 70445-33-9

**Synonyms:** Acetyl Glutamyl Octapeptide-3; 8K14HJF88S

**Sequence:** Acetyl-glu-glu-met-gln-arg-arg-ala-as-p-amide

**Chemical Classification:** Synthetic oligopeptide (acetylated octapeptide in aqueous/glycerin solution).

**Functional Category:** Skin and hair conditioning agent. Cosmetic anti-wrinkle peptide for skin care, eye contour care, hair growth and eyelash formulations.

**IUPAC Name:** (6S,9S,12S,15S,18S,21S)-21-Acetamido-1-amino-12-(3-amino-3-oxopropyl)-6-carbamoyl-18-(2-carboxyethyl)-9-(3-guanidinopropyl)-1-imino-15-(2-(methylthio)ethyl)-8,11,14,17,20-pentaoxo-2,7,10,13,16,19-hexaazatetracosan-24-oic acid

**Description:** Acetyl Octapeptide-3 is a synthetic oligopeptide and an active cosmetic ingredient with pronounced anti-aging properties. Structurally, it represents an acetylated sequence of eight amino acids (Glu-Glu-Met-Gln-Arg-Arg-Ala-Asp) that mimics the activity of the SNAP-25 protein involved in the muscle contraction mechanism. In cosmetic formulations, it is supplied as an aqueous or glycerin solution, providing excellent compatibility with other active ingredients and stability across a wide pH range.

The synergistic presence of arabinogalactan and 3-O-ethyl ascorbic acid further enhances its efficacy. Arabinogalactan improves peptide penetration through the epidermis, while the stable vitamin C derivative stimulates collagen synthesis and provides antioxidant protection. The combination of Phenoxyethanol and

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Ethylhexylglycerin ensures microbiological stability of the solution without compromising bioactivity.

Acetyl Octapeptide-3 is characterized by high biocompatibility, does not clog pores, and does not cause irritation, making it suitable for formulations intended for sensitive areas such as the eye contour region. At concentrations between 0.05 and 0.5%, it effectively reduces wrinkles and fine lines, while prolonged use contributes to a more relaxed and refreshed skin appearance.

In addition to anti-aging products, it is also used in formulations designed to stimulate hair and eyelash growth, improving follicle vitality and hair resistance. Acetyl Octapeptide-3 is water- and glycerin-soluble, stable at temperatures up to 40 °C, and compatible with most emulsion systems. Its application is based on the modern approach of non-invasive wrinkle correction using signal peptides, representing a safe alternative to botulinum toxin in dermocosmetics.

The product appears as a clear transparent liquid, odorless in nature. Peptide content: 1000 ppm. pH: 4.5–7.0.

**Mechanism of Action:** Acetyl Octapeptide-3 acts in a manner similar to botulinum toxin (Botox). It binds to the SNAP-25 protein, interfering with the formation of the SNARE complex. This prevents the release of acetylcholine, the neurotransmitter responsible for muscle contraction. As a result, muscle contractions are weakened or inhibited.

This action leads to relaxation of facial muscles, particularly in areas prone to dynamic wrinkles such as crow's feet and forehead lines. By relaxing these muscles, the appearance of wrinkles formed through repetitive facial expressions such as smiling, frowning, or raising the eyebrows is visibly reduced.

Regular use of products containing Acetyl Octapeptide-3 may result in smoother skin and less visible wrinkles, giving the face a younger and refreshed appearance. Its mechanism of action is effective and painless, as it is applied topically through creams or serums, avoiding invasive procedures such as injections. This non-invasive approach makes it more accessible and practical for daily cosmetic use, with a lower risk of adverse effects compared to botulinum toxin treatments.

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In addition to wrinkle reduction, products containing this peptide are often combined with moisturizing ingredients, further improving skin hydration and contributing to a healthier skin appearance.

### Benefits:

- Effectively reduces the depth of existing facial wrinkles.
- Prevents the formation of new expression lines by inhibiting muscle contractions.
- Provides Botox-like effects without invasiveness or unwanted side effects.
- Suitable for daily skincare, including the sensitive eye contour area.
- Visible results may appear within several weeks of regular use.
- Odorless and colorless, allowing easy incorporation into various cosmetic formulations.
- Possesses an optimal skin-compatible pH range (4.5–7.0).

**Applications:** Acetyl Octapeptide-3 is used in various cosmetic products including serums, creams, lotions, and facial masks. Its use level depends on the desired effect and the type of product formulation.

For facial serums, recommended concentrations range from 3% to 10%, as serums are designed to deliver highly concentrated active ingredients directly into the skin. Due to its lightweight texture, serum formulations allow rapid peptide absorption and provide intensive anti-aging care.

In creams and lotions, concentrations are generally lower, typically between 2% and 5%. These products are intended for daily hydration and skin protection, while the peptide additionally contributes to wrinkle reduction and improvement of skin texture. Moisturizing creams containing Acetyl Octapeptide-3 provide long-lasting hydration, making the skin softer and more elastic.

Facial masks containing Acetyl Octapeptide-3 are commonly formulated at concentrations of 5% to 10%, as they are intended for intensive and deep skin treatment. The mask is applied and left on the skin for a specific period, allowing the peptide to penetrate effectively and deliver maximum benefits, including wrinkle reduction and improved hydration.

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The ingredient should be added to the water phase of formulations at temperatures below 40 °C. It can be combined with hyaluronic acid, amino acids, and facial oils. Typical recommended use levels range from 2% to 5%. For external use only.

During cosmetic formulation, special attention should be paid to peptide compatibility with other ingredients, as well as formulation pH, in order to ensure the stability and efficacy of Acetyl Octapeptide-3. Finished formulations should be tested to achieve the optimal ingredient combination and product performance.

**Method of Production:** Acetyl Octapeptide-3 is produced through enzymatic and chemical synthesis of peptide chains under controlled laboratory conditions. The process begins with sequential coupling of amino acids (glutamic acid, methionine, glutamine, arginine, alanine, and aspartic acid) on a solid support using the Solid-Phase Peptide Synthesis (SPPS) method.

Carbodiimide or HBTU/HOBt activation systems are used during condensation reactions to enable the formation of stable amide bonds between the carboxyl and amino groups of adjacent amino acids. After completion of the peptide chain assembly, the N-terminal amino group is acetylated, improving molecular stability and reducing susceptibility to enzymatic degradation upon skin contact.

Following synthesis, the crude peptide is purified chromatographically, most commonly by reverse-phase HPLC, removing by-products and inactive fragments. The purified peptide powder is then dissolved in glycerin and deionized water, with the addition of mild stabilizers and preservatives such as Phenoxyethanol and Ethylhexylglycerin.

This results in a stable aqueous-glycerin solution of Acetyl Octapeptide-3 ready for use in cosmetic formulations. Manufacturing is performed under sterile conditions in accordance with GMP and ISO 22716 standards, ensuring microbiological purity and consistency of the active substance.

**Animal Testing:** In accordance with current European regulations (Regulation (EC) No. 1223/2009 on cosmetic products), this 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).

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"In silico" refers to testing and evaluation methods performed using computer models and simulations rather than on living organisms (in vivo) or cell cultures (in vitro). This statement 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

**Vegan:** Does not contain ingredients of animal origin.

**Storage:** The material can be safely transported at temperatures up to 25 °C without loss of stability during short-term exposure to elevated temperatures. However, for long-term storage, refrigeration at 4–8 °C is recommended.

This is important because peptides are sensitive to degradation caused by prolonged exposure to heat, light, and moisture. Lower temperatures slow down degradation processes and help preserve bioactivity. Proper refrigerated storage ensures that the peptide maintains its efficacy and stability throughout its declared shelf life.

**Country of Origin:** USA