

TECHNICAL DATA SHEET

Product Name: Copper Tripeptide-1 – 1000 ppm

INCI Name: Water, Glycerin, Copper Tripeptide-1, (+)-Arabinogalactan, 3-O-Ethyl Ascorbic Acid, Phenoxyethanol, Ethylhexylglycerin

CAS: 7732-18-5, 56-81-5, 89030-95-5, 9036-66-2, 86404-04-8, 122-99-6, 70445-33-9

Chemical Classification: Copper peptide complex (dissolved in a water/glycerin base)

Functional Category: Skin and hair conditioner; active ingredient for skin regeneration, collagen synthesis stimulation, and elasticity improvement.

IUPAC Name: copper;(2S)-6-amino-2-[[(2S)-2-(2-aminoacetyl)azanidyl-3-(1H-imidazol-4-yl)propanoyl]amino]hexanoate

Description: Copper Tripeptide-1 (GHK-Cu) is a chemical complex composed of a copper ion (Cu^2) bound to the tripeptide sequence glycine–histidine–lysine (GHK). This complex plays a key role in skin repair and regeneration processes. It acts as a signal peptide that stimulates collagen, elastin, and glycosaminoglycan synthesis, improving skin firmness, elasticity, and tone. GHK-Cu possesses strong antioxidant and anti-inflammatory properties, neutralizes free radicals, and accelerates tissue healing. Regular use may reduce the appearance of wrinkles, scars, and hyperpigmentation while improving skin texture. It is especially valued in anti-aging formulations, as it enhances cellular regeneration, increases hydration, and restores skin vitality. It is also effective in repairing UV-damaged skin and protecting against oxidative stress caused by external factors. In combination with other actives such as hyaluronic acid, niacinamide, or next-generation peptides, GHK-Cu synergistically enhances regenerative and moisturizing effects. Clinical studies have shown that GHK-Cu exhibits regenerative activity even at concentrations as low as 0.000001% (10⁶%). The product appears as a clear, blue, odorless liquid containing 1000 ppm (0.1%) of the active peptide.

Mechanism of Action: The mechanism of action is based on the ability of GHK-Cu to function as a signaling molecule that activates repair and regeneration processes in skin cells. When this tripeptide binds to a copper ion, cellular receptors recognize it and trigger collagen, elastin, and other structural protein synthesis, thereby enhancing skin firmness, elasticity, and resilience. Simultaneously, GHK-Cu modulates the activity of

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metalloproteinases enzymes responsible for breaking down damaged proteins in the extracellular matrix ensuring a balanced process of tissue renewal. The complex also influences gene expression related to wound healing, immune response, and protection against oxidative stress, restoring cellular functionality and communication while increasing energy potential. This explains why GHK-Cu is considered one of the most potent signaling peptides in cosmetology its effectiveness depends not on high concentration, but on its ability to trigger a cascade of regenerative reactions and restore equilibrium between synthesis and degradation of structural skin components.

Benefits:

- Stimulates collagen synthesis, improving skin firmness and elasticity.
- Accelerates wound healing and reduces recovery time.
- Reduces inflammation, redness, and irritation.
- Improves skin texture and tone, making it smoother and more even.
- Minimizes the appearance of wrinkles and scars for a youthful look.
- Supports hair growth and helps in the treatment of alopecia.
- Protects skin from free-radical damage.
- Enhances hydration and regeneration when combined with other active ingredients.

Usage: The use and recommended concentrations of GHK-Cu in cosmetic formulations depend on product type and desired efficacy. The complex is applied in extremely low concentrations typically between 0.001% and 0.1%. Lower levels are used in daily skin-care products, while higher concentrations appear in professional anti-aging serums and regenerative treatments. GHK-Cu should be added during the cold-process phase at temperatures below 40 °C to preserve stability and biological activity. It blends well with hyaluronic acid, niacinamide, ceramides, next-generation peptides, and soothing botanical extracts, enhancing its regenerative and moisturizing action. The optimal pH range is 5.0–7.0 (neutral to slightly acidic), ensuring complex stability and preventing copper ion dissociation. Due to its high efficacy and stability in aqueous systems, GHK-Cu is suitable for serums, gels, lotions, and creams aimed at skin repair, wrinkle reduction, scar fading, and post-sun or post-treatment recovery. When properly formulated, the peptide provides long-term regenerative activity without irritation or the need for high concentrations. It should not be combined with pure acids, retinoids, pure vitamin C, or strong antioxidants. For external use only.

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Note: Avoid ingredients that may form complexes with copper ions. For example, the dipeptide carnosine has a structure similar to GHK and may bind copper, causing a purple color change. EDTA (chelating agent) can also react with copper peptides and turn the solution green. Avoid combining Copper Tripeptide-1 with octyl hydroxamic acid, allantoin, ergothioneine, or most skin-brightening agents such as niacinamide and arbutin, as well as carbomer.

Animal Testing: In accordance with current European Regulation (EC) No 1223/2009 on cosmetic products, the substance has not been tested on animals. Safety assessment is based on available toxicological data, scientific literature, and validated alternative testing methods (in vitro and in silico). The term in silico refers to testing and evaluation methods performed through computer modeling and simulations rather than experiments on living organisms (in vivo) or cell cultures (in vitro). This confirms compliance with the EU ban on animal testing and serves solely for informational purposes related to further use in cosmetic formulations.

GMO Status: Non-GMO

Vegan Status: Contains no animal-derived components

Storage: Can be safely transported at temperatures up to 25 °C without loss of stability during short-term exposure to heat. For long-term storage, refrigeration at 4–8 °C is recommended, as peptides are sensitive to degradation from prolonged exposure to heat, light, and moisture. Lower temperatures slow down degradation and help preserve bioactivity. Proper refrigeration maintains peptide efficacy and stability throughout its declared shelf life.

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