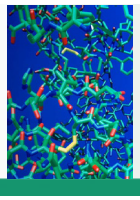


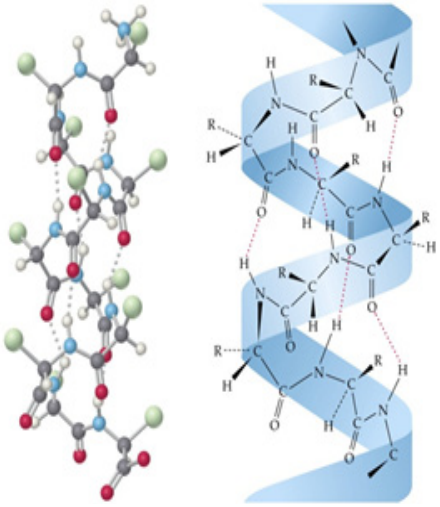
Technical Data Sheet

Tomorrow's Vision... *Today!*®

AC Keratin Amino Acids

Code Number:	20637
INCI Nomenclature:	Keratin Amino Acids
INCI Status:	Approved
Suggested Use Levels:	1.0 - 10.0%
Suggested Applications:	Moisturizing, Conditioning

Keratin is the basic building material for most of the visible parts of the body. Both the stratum corneum (of the skin) as well as hair fibers are composed primarily of keratin. Keratin contains a high proportion of the 2 smallest amino acids, glycine, whose side group is a single hydrogen atom, and alanine, whose side chain is a methyl group. Keratin exists naturally as a cross-linked helical structure. It is the cross-linkage that accounts for the strength and extensibility of the individual hair fibers. The helical structure of keratin allows for inter-bonding between side chain molecules of individual amino acids.



There are 3 types of bonds between amino acid molecules in the keratin helical structure in order of increasing strength: Hydrogen Bond, Salt Bond and Disulfide Bond. The hydrogen bond is a weak, physical bond that can be easily broken by water and heat. This bond can be reformed by drying or cooling the hair. The salt bond is also a weak, physical bond that can be easily broken by weak alkaline/acidic solutions and changes in pH. Normalizing the pH of the hair will reform this particular bond. Stronger than the hydrogen and salt bonds, the disulfide bond is a chemical bond that cannot be broken by heat or water. These bonds can be manipulated through chemically straightening (relaxing) or curling (perming) the hair. The cross-linking occurs at disulfide bridges, which anneal adjacent cysteine residues to form cysteine, a feature that makes keratin unique amongst structural proteins. These key factors are responsible for supplying the hair with strength and durability.

Keratin proteins are too large to penetrate the skin and hair. The hydrolysis (decomposition) of keratin protein or polypeptides results in keratin amino acids which include a mixture of glycine, alanine, glutamic acid, serine, proline, arginine, threonine, and aspartic acid. By hydrolyzing the keratin, the molecular weight decreases, facilitating the penetration of keratin amino acids into the skin and hair. Keratin amino acids can act as a humectant conditioner used to maintain the correct moisture balance in the skin and hair.

AC Keratin Amino Acids will help to lock in moisture, leaving the skin and hair looking smooth and polished, due to the water binding properties of the hydrolyzed keratin. **AC Keratin Amino Acids'** low molecular weight of ~300-500 Da makes this product a ingredient that can provide exceptional moisturization for skin and hair care formulations.

References:

1) Jones Rt, Chahal SP. The use of radiolabeling techniques to measure substantivity to and penetration into hair of protein hydrolysates. The International Journal of Cosmetic Science. 1997, Oct. 215-216

2) Goddard ED, Gruber JV. Principles of polymer scienve and technology in cosmetics and personal care. M. Dekker, NY. 391-464.

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