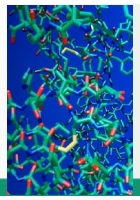

Technical Data Sheet

Tomorrow's Vision... *Today*!

AC Silk Hydrolysate PF

Code Number:	20621PF
INCI Nomenclature:	Hydrolyzed Silk
INCI Status:	Conforms
Suggested Use Levels:	2.0-5.0%
Suggested Applications:	Moisturization, Film-Former

One of the most highly treasured, natural materials, silk has been used in traditional Asian beauty therapies for centuries. Acient medicine techniques, such as Ayurveda, have also prompted the use of silk in personal care products in the European and American companies.

Silk culture began in 2600 BC in ancient China by an Empress, which may be another reason that silk is known as the 'princess' of all fibers. Silk is considered the finest of all natural fibers, and is one of the strongest. This strength is due to the unique combination of proteins and water made by the silk worm, *Bombyx mori*. Silk fibers are produced by the silk worm as protection during pupation while undergoing its metamorphosis from catepillar to moth. The silk fibers can be removed from the cocoon before the moth emerges, cleaned, degummed and used to spin silken cloth. The silk fibers actually consist of two protein strands called fibroin, held together by sericin, a protein gum. Both fibroin and sericin contains the same 18 amino acids. The difference between the two protein compounds is the crystalline structure and high molecular weight of fibroin, causing it to be water-insoluble. Both proteins found in silk are made up mostly of glycine, which allows it to bind easily to water. Silk is associated with different qualities depending on the application. For skin, silk is thought to create a smooth silky look, while in hair care, silk may be used to convey strength. The versatility of the silk fiber and its usages are a few things that makes it very attractive.

Silk is made up of the amino acids serine, alanine and glycine, which form beta-pleated sheets. The high proportion of glycine (50%), the smallest amino acid, allows for tight packing of fibers that are strong and resistant to stretching, which is a result of the peptide bonding. Silk can be hydrolyzed like any other protein and modified to achieve a variety of different functions. The hydrolysates can be modified to increase their subsantivity similar to quaternized proteins or condensed with fatty acids to alter their surface activity. Further reaction of the condensate with an alkaline material will result in a salt that can be used as a mild surfactant.

Protein hydrolysates are typically used for inproving moisturization, elasticity, and firmness while also creating a soft, silky feel. They form a tenacious film on the hair and skin. **AC Silk Hydrolysate PF** is perfect for use in aqueous applications that are intended to enhance hydration or capitalize on the consumer appeal of silk. Additionally, **AC Silk Hydrolysate PF** preservative and paraben-free. When formulating, **AC Silk Hydrolysate PF** and should be added during the water phase, making for easy incorporation into a variety of applications.

References:

1) Hill, J.E. (2009) Through the Jade Gate to Rome: A Study of the Silk Routes during the Later Han Dynasty, 1st to 2nd Centuries CE. BookSurge, Charles ton, South Carolina. Appendix A: "Introduction of Silk Cultivation to Khotan in the 1st Century CE," pp. 466-467.
2) Sutherland TD, *et al*. (2010). "Insect silk: one name, many materials". Annual Review of Entomology 55: 171–88.

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