

Vitazyme™

Protein Complexed Vitamins



Key Product Attributes

- Enhances penetration into the skin
- Enhances vitamin stability
- Moisturizes skin

Formulation Tips

Vitazyme™ Protein Complexed Vitamins are compatible with many commonly used cosmetic ingredients. These materials should be added to the batch after emulsification is complete and the temperature has been reduced to 40–45 °C. All products in the Vitazyme™ family are water dispersible. For optimum stability, the pH of the final product should be in the range of 4–6.5.

Background

Vitamins are well known for their antioxidant and reducing agent properties. They were originally discovered by identifying their presence in foods. Natural sources have higher bioavailability¹⁻² and thus, higher efficacy than synthetic vitamins. However, whether vitamins are derived synthetically or by extraction from food, they show poor stability when formulated into aqueous cosmetic vehicles, also having limited penetration and high irritancy to the skin.

Product Information

Vitazyme™ Protein Complexed Vitamins are biotechnologically advanced protein complexed delivery systems that go beyond traditional cosmetic vitamins. Vitazyme™ Protein Complexed Vitamins are manufactured by taking natural GRAS (Generally Regarded As Safe) plant or yeast derived protein substrates which are known for their natural vitamin content. These substrates are complexed with a measurable level of a GRAS vitamin until a stable reaction product is achieved. This complexation increases the stability of the vitamins and delivers them as a water-dispersible substance. This water-dispersible property enhances penetration upon topical application. The polypeptide part of the complex provides excellent moisturizing, counter-irritant properties, and facilitates absorption and retention to the skin and hair. This highly versatile technology can be processed to yield multiple polypeptide/vitamin products and blends.

General Manufacturing Method

The plant or yeast (*Saccharomyces cerevisiae*: Brewers/Bakers Yeast) is finely ground into a powder and dispersed into water. The water-insoluble components of the powder are removed by filtration. Then the commercially available pure vitamin is added and reacted at mildly elevated temperature with excess water-soluble components of the powder in a fermentation vessel. The reaction proceeds until no more free-state vitamin is detectable in the reaction mixture as tested using HPLC Assay. At this point the reaction is then stopped. The remaining suspension is concentrated under vacuum and spray-dried into a free-flowing powder.

Product Name	INCI Name
Vitazyme™ A Plus	Retinyl Palmitate/Carrot Polypeptide
Vitazyme™ B Complex	Biotin/Folic Acid/Cyanocobalamin/Niacinamide/ Pantothenic Acid/Pyridoxine/Riboflavin/Thiamine/Yeast Polypeptides

References

1. Traber, M.G., Elsner, A. and Brigelius-Flohe, R. Synthetic as Compared with Natural Vitamin E Is Preferentially Excreted as Alpha-CEHC in Human Urine: Studies Using Deuterated Alpha-Tocopheryl Acetates. FEBS Letters 437:145-148, 1998.
2. Acuff, R.V., Thedford, S.S., Hidioglou, N.N., Papas, A.M. and Odom, T.A. Relative Bioavailability of RRR and All-Rac-Alpha-Tocopheryl Acetate in Humans: Studies Using Deuterated Compounds. Am. J. Clin. Nutr. 60:397-402, 1994.

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