



INNOVATIVE SILICONE SPECIALTIES



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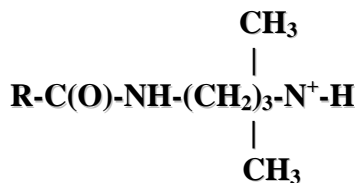
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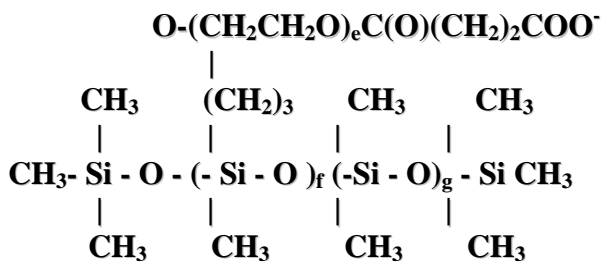
SilPlex™ CS-1 Series

Siltech has developed this new series patent pending conditioning agent based upon complexation chemistry. We believe that this material represent a significant step in the development of highly effective conditioners for hair and skin. Specifically, the SilPlex™ CS-1 combines anionic silicone polymers and fatty amidoamine compounds to form unique salts conforming to the following structure;

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The product has been designed to be soluble in water and compatible with anionic surfactants and provide outstanding conditioning at low concentrations. The nature of water and the hydrogen bonding that occurs between molecules of water makes water a unique material and in fact a material necessary to life as we know it. The interaction of ionic surfactants in dilute aqueous solution is important in formulation and utilization of personal care products.

Since anionic and cationic materials have an opposite charge they will attract each other and form a salt complex. It is the nature of this complex rather than the properties of the polymers themselves that determines how the formulations function. As ionic materials are added to water opposite charges attract and the same charges repel. As the concentration of point charges are increased, the solution becomes so ordered that either (a) the solubility product of the salt is exceeded and a precipitate occurs, (b) The viscosity of the solution increases or (c) the complex becomes insoluble. It is the nature of this interaction that is of interest to the present study. We have dubbed complexes that are made up on anionic and cationic surfactants in aqueous solution that thicken and remain clear soft complexes, while insoluble complexes are referred to as hard complexes. The chemical structure of each determines the hardness or softness of the complex. As the number of anionic and cationic species becomes equal, the number of interaction complexes will be greatest and the concentration of uncomplexed surfactant becomes lowest. It is for this reason that the highest viscosity of the blends of anionic and cationic surfactant occurs at equal amounts.

The SilPlextm CS-1 series has been developed to maximize the disruption of the hydrogen bonding between water molecules, yet still maintaining water solubility. The result is a complex that despite its water solubility achieves lowest free energy by deposition on the hair and skin. The result is a very effective conditioning of the hair and skin.

Product	Active	Solvent
SilPlex CS1 Castor	70%	Water
SilPlex CS1 Coco	50%	Water
SilPlex CS1 Dimer	50%	Propylene Glycol
SilPlex CS1 Behenic	50%	Propylene Glycol

SilPlextm is a trademark of Siltech LLC Dacula, Ga.

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