

Turbo thickener

Taming surfactants

Micellar and associative thickeners both come with drawbacks. With Arlypon TT, Cognis has now developed a high-performance thickening agent that is suitable for all surfactant systems, especially personal care products for sensitive skin. This applies to mixtures of especially mild, difficult-to-thicken surfactant systems as well as for formulations which are low-active-matter systems, contain little SLES, or are completely free from sulfates.

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The synergistic combination of associative and micellar thickening components is effective in all surfactant solutions

Mild surfactants, which are necessary to formulate personal care products for sensitive skin, are difficult to manage. A variety of rheology additives are being used to solve this problem. Among the important types are micellar thickeners, such as fatty alcohol ethoxylates and electrolytes.

They transform spherical micelles in the formulation into rod micelles whereby the surfactant solution increases in viscosity. Micellar thickeners are commonly used for standard surfactant combinations such as Sodium Laureth Sulfate (SLES) in combination with Betaine. This type of thickener is easy to handle, cost efficient, and has stabilizing properties at higher temperatures, especially in heterogeneous systems such as pearlized formulations. However, these thickeners only work in systems with rod-like micelles, such as SLES-based systems.

When it comes to very mild, alternative, sulfate-free surfactant systems for sensitive skin cleansing formulations, the thickening potential of micellar thickeners is often insufficient and a different thickening mechanism is required. Associative thickeners link the micelles within the surfactant solution, thereby forming a network of micelles. This results in a three-dimensional network which allows the viscosity of even very difficult-to-thicken surfactant solutions to be adjusted.

Associative thickeners are not only used for alternative surfactant systems, but for standard surfactant formulations as well. This is because they are capable of thickening at very low surfactant concentrations and can be a "problem solver" for ingredients with a negative influence on viscosity. They also have some additional benefits, such as improving skin sensorial and hair conditioning properties.

Besides their advantages they also have some disadvantages. Their viscosity performance at higher temperatures is insufficient, which can lead to instabilities of pearlized products which are stored at about 40°C. Furthermore, the rheological behavior of a cleansing product thickened with an associative thickener shows pronounced Newtonian flow behavior, this means the viscosity stays largely the same with increasing shear rates.

Combination of two thickener types

The disadvantages for both kinds of thickener were the motivation for Cognis Care Chemicals to develop Arlypon TT. This synergistic combination of associative (PEG/PPG-120/10 Trimethylolpropane Trioleate) and micellar (Laureth-2) thickener components can be used in virtually all types of surfactant systems. The new thickener comes as a clear, non-ionic, pumpable product which is compatible with all surfac-

tant types. It is free of amide/amines and preservatives and can be used in cold processing. These systems, whether they are SLES-reduced or completely free of sulfates, are low active matter systems or blends of specific, mild, and difficult-to-thicken surfactants, and can be successfully tamed by Arlypon TT. This thickener is suitable for all surfactant based personal care products: shampoos, bath and shower gels, baby and facial products, as well as liquid hand cleansers. Already small amounts of the thickener are capable to build up the desired viscosity of formulations based on very mild surfactants.

Additional information can be found on the Internet – see Internet button

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