76900 Thickener ASE 60

Thickener ASE 60 is an acid-containing, cross linked acrylic emulsion copolymer. When the emulsion is diluted with water and neutralized with a base, each emulsion particle swells greatly. The emulsion clarifies under these conditions and becomes highly viscous. Once neutralized, solutions of ASE 60 cannot be reverted to emulsion form as a reduction in pH will precipitate the polymer.

Solutions of ASE 60 salts are more similar in properties to solutions of the natural gums of higher viscosity grades of water-soluble cellulose derivatives than are other grades of acrylic thickeners. Solutions are prepared for use rapidly since neutralization occurs instantaneously with a variety of standard bases. Handling is greatly simplified compared to that necessary with powdered natural or synthetic gums.

It is frequently possible to incorporate ASE 60 directly to the varnish to be thickened without pre-neutralization. This avoids handling a viscous thickener solution. If the system contains enough free alkalinity to neutralize the ASE 60 then “in-situ” solubilisation and thickening takes place. If no alkalinity is present then alkali can be added to the system containing ASE 60 and “in-situ” thickening will occur.

Solutions of ASE 60 effectively suspend pigments, abrasives and other finely divided solids. Thickened lattices are free of any creaming tendency and aqueous suspensions are free of sedimentation. Solutions of ASE 60 are also compatible with soaps, synthetic detergents and dispersing agents. The multivalent cations such as copper, aluminium or iron may cause turbidity to appear in ASE 60 solutions. At high concentrations, these cations will precipitate the polymer.

Typical Properties of Thickener ASE 60

Solids:	28.0 ± 0.5 %
pH, when packed:	approx. 3.5
Viscosity, as supplied (Brookfield, 12 rpm at 25°C):	10 cps
Solution Viscosity, 5 % Na-salt:	25,000 cps
1 % Na-salt:	3,000 cps
Specific gravity, as supplied:	1.054 at 25°C
Appearance:	milky liquid
Colloidal charge:	anionic

ASE-60 is a stable emulsion, resisting mechanical sear such as would be encountered during bulk handling or in high-speed mixing equipment.

Freezing or addition to the emulsion of soluble iron, copper or other multivalent cations may cause precipitation of polymer solids. If the emulsion is accidently frozen and settling of the polymer is evident, the product may be recovered in useful form by diluting it with water and adding alkali to form the salt solution.

Film Properties

Films of ASE 60 or its salts are clear and somewhat brittle. Though hygroscopic, they are less water sensitive than films of most other acrylic thickening agents. Films prepared from the ammonium salt or other volatile amines are less sensitive to water than those cast from the sodium salt. Soft, flexible films can be prepared by the addition of glycerine or other glycols to solutions of ASE 60 salts, while reaction with the zinc-ammonia complex produces a water insoluble film on drying. This zinc polyacrylate film can be redispersed in dilute caustic or ammonia solutions, however.

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Suggested Applications

The high viscosity of ASE 60 solutions, even at low concentrations, suggests their use to suspend pigments and fillers in water-based inks, varnishes, or other coatings. Dispersions of high density pigments thickened to only 500 to 1000 cps. show no tendency to separate after several months´ of storage. Thickener ASE 60 shows little flocculating effect of pigment dispersions in marked contrast to some other thickeners.

Thickener ASE 60 is also useful for viscosity adjustments of water-based inks and aqueous varnishes of many types. Further, ASE 60 has been found useful as a temporary binder in a variety of end uses. The unique properties of good binding coupled with complete polymer burn-out at temperatures as low as 450°C to 500°C have been especially noteworthy in these applications. ASE 60 also should be considered as an additive for adhesive formulations.

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