

# Studies of Alkali-Soluble Resins as Colloidal Stabilizers in Emulsion Polymerization

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## **Abstract**

Many commercial polymeric dispersions (latexes) can be stabilized using surfactants that are required in large amounts when small-sized particles are produced, which can lead to several problems during the emulsion polymerization process and use of dispersions, such as foaming, water sensitivity, instability, exudation of polymer films, and loss of gloss. There have been many approaches to this problem, one of which is to use low molar mass alkali-soluble carboxylic acid containing polymers (so-called *alkali-soluble resins* or *ASRs*) rather than surfactants as the colloid stabilizer. Although several studies have already been published, some key aspects of ASR-stabilized dispersions are still not well understood. Particle nucleation is different compared to conventional emulsion polymerization processes and strongly affects the resulting particle diameter and its distribution. A deeper understanding of the nucleation mechanisms is essential for good control of particle diameter. Additionally, in order to properly control the colloidal stability and rheology of the resulting dispersions, the key parameters influencing grafting of ASRs onto the polymer particles need to be identified. This poster will present the initial work in which commercially-available ASRs are being compared with ASRs synthesized by both solution copolymerization and emulsion copolymerization as protective colloids in emulsion homopolymerizations of (meth)acrylate monomers.