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Article

Styrene–hydroxyethyl acrylate copolymer based alkyd resins with a comb-type structural morphology obtained with a high solid content

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ABSTRACT

Nowadays, so many studies are being carried out with the goal of obtaining environmentally friendly materials. In this study, styrene–hydroxyethyl acrylate copolymer (St-*co*-HEA) based alkyd resins with high solid contents and comb-type structural morphologies were synthesized from St-*co*-HEA and macromonomers [MMs; dimethylol propionic acid modified with different proportions of tall oil fatty acids (TOFAs)]. The molar mass and gloss values of St-*co*-HEA were lower than those of the alkyd resins, but the thermal stability, viscosity, and glass-transition temperature exhibited the opposite behavior. In all cases, the conversion percentage was higher than 80 %. The hydroxyl value and viscosity of the alkyd resins decreased with the TOFA content present in the MMrs, but the molar mass and the thermal stability increased. The rheological behavior of these resins was mainly pseudoplastic. Furthermore, the viscosity values were lower than 10 Pa s. © 2016 Wiley Periodicals, Inc. J. Appl. Polym. Sci. **2016**, *133*, 43996.

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