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(54) Title: POLYURETHANE PREPOLYMER, STABLE AQUEOUS DISPERSIONS WITH HIGH SOLIDS CONTAINING THE SAME AND METHOD OF USING AND PREPARING THE AQUEOUS DISPERSIONS

(57) Abstract: A polyurethane dispersion containing the reaction product of a polyurethane prepolymer and water are shear, shelf, temperature, pH and electrolyte stable. The amount of the reaction product in the dispersion may be as high as 60 weight percent. The prepolymer may be the reaction product of a polyisocyanate and a hydrophilic alkylene oxide polyol or polyamine having a molecular weight of between 800 and 1,500 and an active-hydrogen containing material, such as a polyol, and optionally, a surfactant. The hydrophilic alkylene oxide polyol or polyamine is present in an amount sufficient to reduce the interfacial tension of the prepolymer to less than or equal to 10 dynes/cm. The amount of ethylene oxide in the prepolymer is between from 5.0 to 5.5 weight percent. The water solubility of the high molecular weight active-hydrogen containing material typically less than 10.0 g per 100 g of water. The dispersion produced from the prepolymer has high solids content and excellent shear and shelf stability. Solvent free dispersions of such polyurethanes may be prepared from a continuous HIPR procedure.

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