

Abstract

ENCAPSULATED HYDROPHILIC POLYMERS AND THEIR PREPARATION

A multistaged polymer containing a hydrophilic core fully encapsulated with a hydrophobic shell without a tiecoat layer is disclosed. A method is also disclosed for encapsulating hydrophilic polymers including the steps of:

- (1) emulsion polymerizing a hydrophilic core polymer from 5% by weight to 100% by weight, based on the total weight of the core polymer, of a hydrophilic monoethylenically unsaturated monomer and from 0% by weight to 95% by weight, based on the total weight of the core polymer, of at least one nonionic monoethylenically unsaturated monomer;
- (2) emulsion polymerizing, in the presence of the core polymer, at least one shell polymer from 90% by weight to 99.9% by weight, based on the total weight of shell polymer, of at least one nonionic monoethylenically unsaturated monomer and from 0.1% by weight to 10% by weight, based on the total weight of the shell polymer, of an acid-functional monoethylenically unsaturated monomer,

wherein the acid-functional monoethylenically unsaturated monomer is added to the polymerization of the shell polymer over 100% of the total shell monomer feed when the particle size of the core polymer is from 130 nm to 2.0 microns and over the first 50% of the total shell monomer feed when the particle size of the core polymer is less than 130 nm.

This method of encapsulating a hydrophilic polymer with a hydrophobic polymer eliminates the need for a tiecoat layer.