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(54) **Title:** INTERCALATION AGENT FREE COMPOSITIONS USEFUL TO MAKE NANOCOMPOSITE POLYMERS

(57) **Abstract:** A two step method for preparing a filler composition, the filler composition useful to prepare a nanocomposite polymer. The first step is to disperse a water dispersible filler material in a liquid comprising water to form a dispersion. The second step is to replace at least a portion of the water of the liquid with an organic solvent to form the filler composition, the water concentration of the liquid of the filler composition being less than six percent by weight, the average size of at least one dimension of the filler material being less than two hundred nanometers upon examination by transmission electron microscopy of a representative freeze dried sample of the dispersion of the first step. A nanocomposite polymer can be prepared by mixing the above-made filler composition with one or more polymer, polymer component, monomer or prepolymer to produce a polymer containing a filler having an average size of at least one dimension of the filler of less than two hundred nanometers upon examination by transmission electron microscopy of a representative sample of the polymer. In addition, an epoxy resin composition useful for making a cured epoxy nanocomposite polymer, the epoxy resin composition made by a two step process. The first step is to mix an epoxy resin with the filler composition to form an epoxy resin mixture. The second step is to remove organic solvent from the epoxy resin mixture to form the epoxy resin composition. And, a nanocomposite polymer, made by the step of mixing the filler composition with one or more polymer, polymer component, monomer or prepolymer to produce a polymer containing a filler having an average size of at least one dimension of the filler of less than two hundred nanometers upon examination by transmission electron microscopy of a representative sample of the polymer.

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