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(54) Title: HIGHLY FILLED COMPOSITES OF POWDERED FILLERS AND POLYMER MATRIX

(57) Abstract: Highly filled composite materials, e.g. comprising approximately 60 volume% or greater of finely powdered particles of filler in a polymer matrix, are made by dissolving polymer in a volatilisable solvent, adding filler and forming a homogeneous mixture by high shear mixing. Most solvent is then removed while maintaining homogeneity in the mixture, preferably by evaporation in a high shear mill. Then, extruding a thin layer of the composite material and removing remaining solvent, as by heating. Bodies are formed from the dried layer, which are heated and pressed to melt and disperse melted polymer into the interstices between filler particles. Thereby, certain polymers unusable at low solids contents become effective bonding materials at high solids contents. Filler materials are chosen to tailor electrical and physical properties of the articles, which may comprise substrates for electronic circuits. Suitable polymers are certain polyarylene ethers soluble in cyclohexanone.



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