

EPOXY RESIN COMPOSITIONS FOR LIQUID ENCAPSULATIONAbstract of the Disclosure

Disclosed are liquid epoxy encapsulants comprising a basic bisphenol-type epoxy resin with epoxy groups at each end having an epoxy equivalent of 170 – 300, and an amine curing agent such as 4,4' - Methylene dianiline with the content of 15 – 30 wt % with respect to epoxy resins and other additives such as coloring agents, flame retardants, and catalysts. Aliphatic and cycloaliphatic epoxy resins and polyamide curing agents can optionally be added to mix with the bisphenol epoxy resin to modify the properties of the liquid epoxy encapsulants, *i.e.*, to decrease their viscosities and to increase their toughness. The liquid epoxy encapsulants of this invention have characteristics of suitable viscosity, fast curing, high adhesion to polyimides and high reliability in the application of flip-chip-on-board (FCOB) encapsulation as underfill materials. These liquid epoxy resins are also able to be applied in epoxy die attach adhesives and epoxy electrically conductive adhesives in the form of isotropic (ICA) and anisotropic conductive adhesives (ACA), with their excellent properties of fast curing and high adhesion.

(Fig. 1)