

THERMOMECHANICAL PROPERTIES OF TOUGHENED PHENOLIC RESOL RESIN

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ABSTRACT

Changes in thermal and mechanical properties of polyvinylbutyral (PVB) modified phenolic resole resin were studied. The DSC and TGA studies show that an increase in PVB content results in a reduced thermal stability at temperatures above 360 °C, but causes little change in thermal properties at temperatures below 300 °C. The izod impact strength of cast moulded resin is maximum with PVB content of 10 phr. The PVB modified phenolic system possessed discrete spheres of PVB evenly dispersed in a phenolic resin matrix at low thermoplastic content. However, at higher concentrations, phase inversion resulted, and the morphology consisted of discrete spheres of phenolic resin embedded in a PVB matrix. A decreased in hydroxyl peak intensities (3497-3362 cm⁻¹) and broadening of ether peak (1275-1200 cm⁻¹) are more prominent when compared with the unmodified blend, due to cure reactions and with the increased amount of PVB in the blend film.

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