

Preparation and characterization of an epoxy resin system with epoxidized soybean oil

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Epoxidized soybean oil (ESO) was used as an impact modifier and a reactive modifier for a typical diglycidyl ether of bisphenol A (DGEBA) based epoxy resin system. ESO and DGEBA were mixed at different weight ratios of 7.5/92.5~30/70 and stoichiometric amount of ethylene diamine was used as a curing agent. The mechanical and thermal properties of the epoxy resin system were investigated by UTM, impact tester, DSC and TGA. The mechanical properties of the epoxy resin system increased with ESO content. However, the thermal stability of the epoxy resin system decreased slightly with ESO content. The curing and degradation behaviors of the epoxy resin system were analyzed by the Kamal equation and the Ozawa equation.