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Synthesis and Thermal Degradation Studies of Aromatic Based Epoxy Resins Bearing Salicylaldehyde and Epichlorohydrin group.

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ABSTRACT

The thermal degradation of epoxy resin 4, 4' – bis (thiourea) biphenyl sulphone, salicylaldehyde and epichlorohydrin blend was investigated by using thermogravimetric analysis (TGA). Spectroscopic analysis Fourier transform infrared spectroscopy and proton Nuclear Magnetic Resonance were performed for product identification. Thermal, chemical stability and hardness testing were conducted on the cured and uncured product. The results of TGA revealed that the activation energy calculated by Sharp Wentworth and Freeman Carroll methods are good agreement with each other. The monomers were blended with epoxy based trickle impregnation resin and cured. The cured resins were subjected to TGA and DSC analysis. Presence of 3% by weight of the diglycidyl monomers bearing salicylaldehyde and epichlorohydrin groups in the cured blends did not alter the thermal stability but increased the thermal conductivity. The thermal conductivity of the cured blends were approximately 1.6 times higher than that of epoxy-based trickle impregnation resin and comparable with the epoxy-based resin filled with 20% inorganic fillers.

Keywords: Epoxy resin, FTIR, Thermal degradation, SEM, DGEBA, Epichlorohydrin.

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