

Effect of CuO Nanoparticle on Mechanical and Thermal Properties of Palm Oil based Alkyd/Epoxy Resin Blend

Huei Ruey Ong, Md Maksudur Rahman Khan, Ridzuan Ramli, Rosli Mohd Yunus

Faculty of Chemical and Natural Resources Engineering, Universiti Malaysia Pahang,
Lebuhraya Tun Razak, 26300 Kuantan, Pahang, Malaysia

Malaysian Palm Oil Board (MPOB), No.6, Persiaran Institusi, Bandar Baru Bangi, 43000
Kajang, Selangor, Malaysia

Abstract: In the present work, palm oil based alkyd resin was prepared with and without the presence of CuO nanoparticles. The curing of the prepared alkyd resin with different ratio of epoxy resin in the presence of poly (amido amine) as hardener was investigated. The mechanical properties, such as tensile and flexural strength of the cured blends were measured. The interaction between alkyd, epoxy and CuO nanoparticle were investigated by using Fourier transform infrared spectroscopy (FTIR). It was found that, crosslinking between alkyd and epoxy is possible through the formation of interpenetrating polymer network (IPN). The thermal stability and wettability of the blend was also investigated. It was found that, the CuO incorporated nanocomposite presented greater thermal stability and hydrophobicity than neat composite.

Keywords: Alkyd/Epoxy, CuO nanoparticles, FTIR, Thermal, Mechanical