

Mechanical Properties of Graphite Filled Unsaturated Polyester and Unsaturated Polyester/Palm Oil Blend Resin

Siti Noor Hidayah Binti Mustapha*, Muhammad Syafiq Asyraf Bin Azhman, Shamsul Zakaria, Rasidi Roslan, Rohani Binti Mustapha, Tee Chuan Lee

a Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, Gambang, Pahang 26300, Malaysia

b School of Ocean Engineering, Universiti Malaysia Terengganu, Kuala Terengganu, Terengganu 21030, Malaysia

c Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor 86400, Malaysia

Abstract:

This research aim to investigate the effect of graphite loadings in unsaturated polyester (UPE) / acrylated epoxidized palm oil (AEPO) blend resin. The modification of epoxidized palm oil (EPO) to AEPO was carried out using acrylation process and further blended with synthetic UPE resin. Graphite powder was added at 0.03, 0.05 and 0.1 phr into the UPE/AEPO blend resin and cured in an oven at 100 °C and 160 °C. FTIR spectrums showed the disappearance of oxirane ring and existence of carbon double bond indicating successful of AEPO synthesis process. Tensile and Izod impact test revealed that, graphite showed different effects to neat UPE and UPE/AEPO blend resin. In neat UPE, graphite significantly improved the stiffness properties at 0.1 phr additions. However in UPE/AEPO blend resin, the toughness properties were improved with increased graphite loadings.

Keywords: Biocomposite; Bioresin; Graphite; Palm Oil; Polyester

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