

Sugar Palm Fibre-Reinforced Unsaturated Polyester Composite Interface Characterisation by Pull-Out Test.

ABSTRACT

Polymer composites using natural fibres as the reinforcing agents have found their use in many applications. However, they do suffer from a few limitations, due to the hydrophilicity of the natural fibres which results in low compatibility with the hydrophobic polymer matrices. This paper aims to determine the best sugar palm (*Arenga pinnata*) fibre surface treatment to improve the fibre-matrix interfacial adhesion. Fibre surface modifications were carried out by water retting process where the fibres were immersed in sea water, pond water and sewage water for the period of 3 days. The test samples were fabricated by placing a single fibre in an unsaturated polyester resin. Single-fibre pull-out tests showed that freshwater-treated fibres possessed the highest interfacial shear strength, followed by untreated fibres, sewage water-treated fibres, and sea water-treated fibres. Further surface analyses of the samples were performed using a Scanning Electron Microscope (SEM) and an Energy Dispersive X-ray Spectroscopy (EDS) system. (2011) Trans Tech Publications.

Keyword: Composite; Sugar palm.