World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:10, No:01, 2016

Physico-Mechanical Properties of Chemically Modified Sisal Fibre Reinforced Unsaturated Polyester Composites

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Abstract : Sisal leaves were subjected to enzymatic retting method to extract the sisal fibre. A portion of the fibre was pretreated with alkali (NaOH), and further treated with benzoyl chloride and silane treatment reagents. Both the treated and untreated Sisal fibre composites were used to fabricate the composite by hand lay-up technique using unsaturated polyester resin. Tensile, flexural, water absorption, density, thickness swelling and chemical resistant tests were conducted and evaluated on the composites. Results obtained for all the parameters showed an increase in the treated fibre compared to untreated fibre. FT-IR spectra results ascertained the inclusion of benzoyl and silane groups on the fibre surface. Scanning electron microscopy (SEM) result obtained showed variation in the morphology of the treated and untreated fibre. Chemical modification was found to improve adhesion of the fibre to the matrix, as well as physico-mechanical properties of the composites.

Keywords : chemical resistance, density test, polymer matrix sisal fibre, thickness swelling
Conference Title : ICCIS 2016 : International Conference on Chemical Industry and Science
Conference Location : Jeddah, Saudi Arabia
Conference Dates : January 26-27, 2016