

Mechanical Properties of Sugar Palm Fibre Reinforced Thermoplastic Polyurethane Composites

Authors : Dandi Bachtiar, Mohammed Ausama Abbas, Januar Parlaungan Siregar, Mohd Ruzaimi Bin Mat Rejab

Abstract : Short sugar palm fibre and thermoplastic polyurethane were combined to produce new composites by using the extrude method. Two techniques used to prepare a new composite material, firstly, extrusion of the base material with short fibre, secondly hot pressing them. The size of sugar palm fibre was fixed at 250µm. Different weight percent (10 wt%, 20 wt% and 30 wt%) were used in order to optimise preparation process. The optimization of process depended on the characterization mechanical properties such as impact, tensile, and flexural of the new (TPU/SPF) composite material. The results proved that best tensile and impact properties of weight additive fibre applied 10 wt%. There was an increasing trend recorded of flexural properties during increased the fibre loading. Meanwhile, the maximum tensile strength was 14.0 MPa at 10 wt% of the fibre. Moreover, there was no significant effect for additions more than 30 wt% of the fibre.

Keywords : composites, natural fibre, polyurethane, sugar palm

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