

Investigation on the effect of alkaline treatment on seaweed/ polypropylene (SW/PP) blend composites

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ABSTRACT

Natural fibers are preferably used as a raw material in wood-plastic composites (WPC) due to their availability and low cost. However natural fibers composite need to be treated to enhance the properties before being used in the production of the composites. In this research, alkaline treatment was applied to the seaweed fibres. It is expected by alkaline treatment will improve the physical and mechanical properties of the seaweed/polypropylene (SW/PP) blend composites. The techniques used for making this composite are using extrusion and hot-pressing techniques. The results show that SW/PP composite after undergoing alkaline treatment has a low percentage of water absorption of the composites compared to untreated SW/PP composite. The greater value of melt flow resistance (MRF) in untreated SW/ PP composites shows the presence of waxy and cellulose elements and makes the composites easier to flow in the melt indexer. The tensile strength of composites is measured greater with a value 0.1944 MPa in treated SW/ PP composites compared to 0.1311 MPa in untreated SW/PP composites. Besides, the impact strength of the untreated SW/ PP composites measured low energy of 28.9910 J/m in contrast with the treated SW/PP composites that achieved a greater value of the energy 59.5800 J/m. The analysis of these data shows that alkaline treatment improves the properties of natural fibers in the composite.

KEYWORDS

Alkaline treatment; Polypropylene; Seaweed; Wood plastic composite (WPC)

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