

## **Physical and mechanical properties of kenaf/seaweed reinforced polypropylene composite**

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### **ABSTRACT**

Wood plastics composites (WPCs) refer to any composites that consist of natural fibers combined with thermosets or thermoplastics polymers. Natural fibers are preferably used as reinforcement in WPCs due to their availability, low cost, and low density. Currently, kenaf fiber has been used widely in making composite while seaweed is more used in cosmetics and food. In this study, kenaf fiber and seaweed fiber is mixed with different ratio. This study aims to investigate the potential of kenaf/seaweed to be converted into WPCs and the physical and mechanical properties of kenaf/seaweed reinforced polypropylene composite were figured out. The techniques used for making this composite are using extrusion and hot-pressing techniques. Kenaf reinforced composite and seaweed reinforced composite are prepared as a control sample in the research. The result shows that the tensile and impact strength of kenaf/seaweed reinforced composite is low compared to kenaf reinforced composite but higher than seaweed reinforced composite with a value of 0.1098 MPa and 49.53 J/m respectively. Melt flow index (MFI) result was displayed through the rate of flow of composite under two different loads at 120 kg and 216 kg at temperature 1900C. The rate of flow was affected by the increment of viscosity. It is shown that adding fiber into composite results in an increase in MFI index. The amount of water absorption of kenaf/seaweed reinforced polypropylene composite was lower than kenaf composite but higher than seaweed composite. It is shown that seaweed improved the properties of kenaf/polypropylene reinforced composite in terms of water absorption properties but lower in mechanical properties.

### **KEYWORDS**

Kappaphycus alvarezii; Mechanical kenaf/seaweed composite; Physical; Polypropylene

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