PREPARATION AND CHARACTERIZATION OF HDPE – WOOD COMPOSITE

W.K.P. Piyankara, and S.V. Udayakumara*

Department of Materials Science and Engineering, University of Moratuwa, Sri Lanka

**Email: udayakumara@uom.lk*

The objective of this research is to prepare a wood plastic composite (WPC) material for partition boards using saw dust and high-density polyethylene (HDPE). WPCs have gained popularity as a low cost, ecofriendly material. In this study, Wood-Plastic Composites were fabricated using HDPE and sawdust from Jack wood using the hot-pressing method. Six different HDPE: sawdust compositions, ranging from 0% to 50% sawdust, were prepared, and their mechanical and physical properties were evaluated according to the ASTM D1037 standard. Flexural strength was determined using a universal testing machine, while hardness was assessed using a Shore hardness tester. Water absorption percentage was measured to evaluate the physical properties of the samples. Results showed that the highest flexural strength was achieved at 40% and 50% sawdust content, while the highest modulus of elasticity was observed at 50% sawdust content. Hardness increased with increasing sawdust percentage, whereas impact strength decreased. Water absorption also increased with increasing sawdust content. The results of this study indicate that HDPE-based wood-plastic composites exhibit favorable properties, making them a viable, low-cost, sustainable, and eco-friendly alternative for partition board materials.

Keywords: Wood Plastic Composite, HDPE, Sawdust