

Innovative Technologies of Waste Recycling With Production of High Performance Panels

Abrahams Mwasha and Dillon Ramdhanie

The University of the West Indies
Trinidad and Tobago

Abstract

In this paper sawmill dust bonded with polystyrene waste as the binder are being considered in producing wall panels that would exhibit improved physical and mechanical properties. A measured volume of polystyrene waste binder was mixed with a known quantity of sawmill dust to produce sawmill-dust-polystyrene composite. Test specimens were then produced from the various composites which were used to perform flexural, tensile and water absorption tests. The samples were left to cure in room temperature for 12 days and 28 days. The results obtained showed that the composition of 60% sawdust 40% polystyrene slurry was the optimum composition yielding the highest tensile and flexural strength, with desirable water absorption properties when compared to some of the manufactured wood samples (particle Board and Plywood). It was also noted that the strength of the composite increased with curing time. Therefore, the use of Sawmill dust bonded with polystyrene waste adhesive introduces a sustainable approach on reducing pollution caused by sawdust and polystyrene wastes.