

Preparation of Wood-Plastic Composite Using Teak Saw Dust and High Density Polyethylene

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Wood-Plastic composites are materials made out of wood (Fibers, particles, dust, etc..) and thermoplastic materials (PP, LDPE, HDPE, etc...). From Recent history wood-plastic composites have an increase in popularity due to their better properties than conventional wood based materials like hard board, plywood, etc... These wood-plastic composites have various applications including particle boards and ceiling sheets however cost of these composites are generally high. Therefore this study was aimed to develop an affordable composite material using locally available saw dust and waste high density polyethylene as thermoplastic material which is one of the main plastic waste Sri Lanka. Teak saw dust was selected as a type of saw dust due to its higher availability in Sri Lanka.

The composites with various compositions were prepared by hot compression moulding at 150 °C by increasing the percentage of saw dust from 30% to 70% by weight. Tensile strength, modulus of rupture, hardness, thickness swelling and water absorption were determined for all compositions according to the ASTM standards.

The results showed highest tensile strength at 70/30 weight % HDPE/Saw dust content and highest modulus of rupture at 40/60 weight %. Also results showed that hardness of the composites increased with increasing saw dust percentage while water absorption and thickness swelling decreasing. But water absorption and thickness swelling of all compositions were much better than the Plywood and hard boards.