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(57) Abstract :

The research aimed to transform sawdust and polymer wastes such as high-density polyethylene (HDPE) and low-density polyethylene (LDPE) into valuable materials. The study used HDPE and LDPE granules as matrix phase material, and sawdust as a reinforcing material. The different combination of matrix materials and reinforcing material blending was done using a twin-screw extruder. The extruded mixture was turned into pellets and then injection moulded to create composite specimens. The mechanical properties of the fabricated specimens were evaluated through tensile, hardness, flexural resistance, and water absorption tests. The outcome of the research shows that the 80% HDPE and 20% sawdust demonstrated marginally better tensile strength. The 40% HDPE, 40% LDPE, and 20% sawdust composite showed higher hardness values compared to other combinations. The study offers a practical result for reprocessing and handling timber waste from furniture manufacturers and timber industries. The test results suggest that treated sawdust had better mechanical properties than untreated sawdust. The composite with the highest proportion of HDPE and sawdust showed the most favorable mechanical properties, followed by HLSC, while the LSC composite had the least desirable performance.

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