

EXPERIMENTAL INVESTIGATION AND ANALYSIS OF MECHANICAL PROPERTIES OF JUTE FIBER REINFORCED POLYPROPYLENE COMPOSITES

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Abstract

In the present work, injection-molding method was utilized in manufacturing polypropylene (PP) composites reinforced with 10, 20, 30, 40 and 50wt% jute fibers. Specimens were prepared for the required test according to ASTM standards. Tests such as tensile, flexural, impact and hardness were conducted. Results showed that as the percentage of jute fiber increased in the matrix, tensile modulus, flexural strength, flexural modulus and hardness increased up to 40wt% of fiber loading and then decreased for a fiber loading of 50 wt%. The tensile strength and impact strength of the composite decreased as the fiber loading increased. SEM micrographs were taken at 500x to validate the test results for all the mechanical properties at 40wt% jute fiber loading. From SEM and results of the tests, it is found that 40wt% jute fiber loading in the matrix is the optimum one. Later on, values for the properties decreased with increase in fiber loading. Analysis of the results and conclusions are presented.

Keywords: Jute fiber, Polypropylene, tensile, flexural, impact, hardness.