

Development of Natural Fiber-Plastic Composite Using Jute Fiber and Epoxy Resin

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In modern world, fiber reinforced plastics play a dominant role. The fiber which serves as a reinforcement in composite may be synthetic or natural. Although synthetic fibers (ex. Glass, carbon, etc..) possess higher mechanical properties, their applications are limited due to high cost and health issues. Natural fibers are generally cheaper than the synthetic fibers.

The present study describes the development of a natural fiber - plastic composite consisting of jute fiber as reinforcement in epoxy resin. Experiments are carried out to study the effect of fiber volume and length on mechanical behavior of these epoxy based composites.

Composites prepared with random fiber orientation and average fiber length varied from 1cm to 6cm. Variation of modulus of rupture (MOR), tensile strength and Impact strength were studied with varying fiber length.

Also studied the effect of fiber volume on MOR, tensile strength, impact strength and hardness of composite by varying fiber volume fraction from 4% to 12 % for fibers with 5cm average length.

Composite with 10% jute fibers showed highest values of MOR 5.1 MPa, tensile strength 567.1 MPa and Impact strength 7.2 kgcm.