

Effects of Environmental Factors on Flexural Properties of Fiber Reinforced Polymer Composite

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ABSTRACT

Polymer composites have high potential to reduce the overall weight of Automobile. The advantages demonstrated by composites are high stiffness, high strength, low density, no corrosion problems, long fatigue life, tailorable properties (including thermal expansion), and the ability to form complex shapes. The main constraint for composites which is restricting to reach its full potential is that, its properties are sensitive to temperature and moisture. The properties are sensitive to moisture absorption even to the tune of 1-2 %. In the present study, flexural properties of material (Glass fiber + Epoxy) are checked at different environmental conditions. At each condition the samples are aged for a period of 144 Hrs. Flexural properties such as Flexural strength, Strain at Failure, Chord Modulus, Chord Stiffness are calculated at each condition. Failure mechanisms of material at different environmental conditions were studied. Fracture surfaces of material is studied to understand the effect of temperature and moisture on the failure behavior of material.

Key words: Polymer composites, Flexural properties, Glass fiber, Epoxy, environmental conditions