

Flexure and impact properties of glass fiber reinforced nylon 6-polypropylene composites

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ABSTRACT

In recent years, polymer composites are rapidly developing and replacing the metals or alloys in numerous engineering applications. These polymer composites are the topic of interests in industrial applications such as automotive and aerospace industries. In the present research study, glass fiber (GF) reinforced nylon 6 (PA6)-polypropylene (PP) composite specimens were prepared successfully using injection molding process. Test specimens of five different compositions such as, 70%PA6+30%PP, 65%PA6+30%PP+5%GF, 60%PA6+30%PP+10%GF, 55%PA6+30%PP+15%GF and 50%PA6+30%PP+20%GF were prepared. In the experiments, flexure and impact tests were carried out. The obtained results revealed that flexure and impact properties of the polymer composites were significantly influenced by the glass fiber content. Results showed that flexural strength is low for pure polymer blend and flexural strength of GF reinforced composite increases gradually with the increase in glass fiber content. Test results also revealed that the impact strength of 70%PA6+30%PP is the highest and 55%PA6+30%PP+15%GF composite shows moderate impact strength. On the other hand, 50%PA6+30%PP+20%GF composite shows low toughness or reduced impact strength.

KEYWORDS:

Aerospace industry; Bending strength; Glass fibers; Injection molding; Polyamides