The effect of silane treated fibre loading on mechanical properties of pineapple leaf/kenaf fibre filler phenolic composites

ABSTRACT

The aim of the present study is to investigate mechanical and morphological properties of pineapple leaf fibres (PALF) reinforced phenolic composites and its comparison with kenaf fibre (KF)/phenolic composites. Mechanical properties (tensile, flexural and impact) of untreated and treated PALF phenolic composites at different fibre loading were investigated. Tensile, flexural and impact properties of PALF and kenaf/phenolic composites were analyzed as per ASTM standard. Morphological analysis of tensile fracture samples of composites was carried out by scanning electron microscopy. Obtained results indicated that treated PALF/phenolic composites at 50% PALF loading exhibited better tensile, flexural and impact properties as compared to other untreated PALF/phenolic composites. Treated kenaf/phenolic composites at 50% fibre loading showed better tensile, flexural and impact properties than untreated kenaf/phenolic composite. It is concluded that treated 50% fibre loading kenaf and PALF/phenolic composites showed better mechanical properties than untreated kenaf and PALF/phenolic composites due to good fibre/matrix interfacial bonding. Results obtained in this study will be used for the further study on hybridization of PALF and KF based phenolic composites.

Keyword: Pineapple leaf fibres; Kenaf fibres; Phenolic composite; Mechanical properties; Morphological properties