

Effects of alkaline treatment and a compatibilizing agent on tensile properties of sugar palm fibre-reinforced high impact polystyrene composites

ABSTRACT

The effects of alkaline treatment and a compatibilizing agent on the tensile properties of sugar palm fibre-reinforced high impact polystyrene (HIPS) composites were studied. Two concentrations of an alkali solution (4% and 6%) and two percentages of a compatibilizing agent (2% and 3%) were used in this study. The alkaline treatment was carried out by immersing the fibres in 4% and 6% alkali solutions for 1 hour. A 40 wt. % of sugar palm fibre (SPF) was blended with HIPS and the compatibilizing agent using a Brabender melt mixer at 165 °C. All the treated fiber composites showed tensile strength enhancement compared with untreated composites. The maximum strength increase was 35%, which was achieved by 4% alkali treatment; however, there was no improvement in the tensile modulus.

Keyword: Tensile properties; Sugar palm fibre; HIPS; Alkaline; Compatibilizing agent