

Tensile properties of kenaf yarn fibre reinforced unsaturated polyester composites at different fibre orientations

ABSTRACT

This paper reported the study of tensile properties of kenaf yarn fibre reinforced unsaturated polyester (UP) composites at different fibre orientations, i.e. 0° , $\pm 45^\circ$ and 90° . It is concluded that composites with 0° orientation show higher strength and stiffness than composites with $\pm 45^\circ$ and 90° angle fibre orientation. The highest value of stress is 29 MPa for 0° loading direction followed by $\pm 45^\circ$ loading direction (28 MPa) and 90° loading direction has the lowest stress value of 6 MPa. Tensile modulus results revealed the highest value of 10.61 GPa for 0° loading direction and the tensile modulus for 45° orientation of loading direction is 5 GPa, followed by the modulus for 90° of fibre loading direction of 1.2 GPa; which is the lowest. Results showed that the highest temperature was concentrated at tool edge for Ti6Al4V.

Keyword: Fibre orientation; Kenaf yarn fibre; Tensile properties; Unsaturated polyester