

Effect of tungsten carbide on mechanical and tribological properties of jute/sisal/E-glass fabrics reinforced natural rubber/epoxy composites

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Abstract

Natural fiber polymer composites have been largely used in applications like aerospace, automotive, marine, and other civil structures, where mechanical and tribological properties are of prime consideration. The performance of hybrid composites can be improved by using different natural fibers and adding particulate fillers to them. In this study, mechanical and tribological properties of jute/sisal/E-glass fabrics reinforcing matrix such as natural rubber and epoxy filled with different proportion of tungsten carbide (WC) powder were studied. Mechanical properties like tensile strength, flexural strength, impact strength, and also tribological behavior like two-body abrasive wear of composite were studied. Taguchi technique was employed for wear analysis. Results revealed that there is a significant change in the mechanical properties and enhancement of wear behavior was noticed due to the incorporation of filler (WC) particles.

Keywords

Jute, sisal, E-glass, tungsten carbide, natural rubber, epoxy, hand lay-up

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