

## A Preliminary Study on the Effect of Reinforcing Polyesters with Kenaf and Sisal Fibres on Their Mechanical Properties

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**Abstract:** *Kenaf and Sisal fibres generally have some advantages such as their eco-friendly nature, biodegradability, renewable nature are lighter than synthetic fibres. The aim of this study is to evaluate the potentials of using weaved and un-weaved indigenous sisal and kenaf fibre to reinforce polyester resin based on the physical and mechanical properties obtainable from the resulted composites. The composites materials and sampling were prepared in the laboratory by introducing 10g of the fibre which is about 20% fibre content into the matrix using 1) the hand lay-up method for un-weaved samples, and 2) coating method for weaved samples, with the aid of a mechanical roller. Samples were prepared based on ASTM: D3039-08 for tensile test. Properties such as tensile strength and modulus, hardness, impact strength, flexural strength, density and water absorption were analysed. The results of the characterization showed that density of the material reduced on introduction of fibres while the rate at which the material absorbs water increased though sisal fibre reinforced materials absorbed more. This was due to the void content of composite which increased due to the fibre inclusion within the composite. The results also show that the flexural strength of the composite material developed increased with fibre introduction, though weaved fibre possesses more strength than un-weaved ones. Finally, no particular composition possesses optimum value for all the properties measured.*

**Keywords:** *Kenaf; Sisal; Polyester; Fibre; Composite, Physical Properties; Mechanical Properties*