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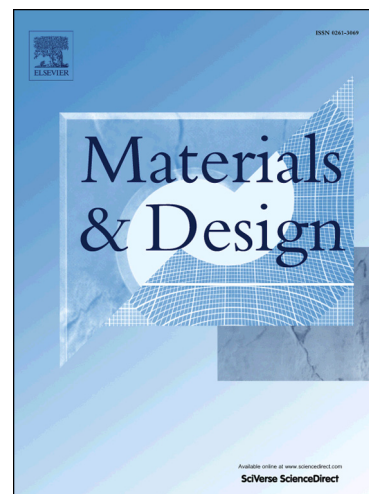
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## Mechanical properties of banana/kenaf fiber-reinforced hybrid polyester composites: Effect of woven fabric and random orientation

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### Abstract:

The present work deals with the effect of weaving patterns and random orientation on the mechanical properties of banana, kenaf and banana/kenaf fiber-reinforced hybrid polyester composites. Composites were prepared using the hand lay-up method with two different weaving patterns, namely, plain and twill type. Of the two weaving patterns, the plain type showed improved tensile properties compared to the twill type in all the fabricated composites. Furthermore, the maximum increase in mechanical strength was observed in the plain woven hybrid composites rather than in randomly oriented composites. This indicates minimum stress development at the interface of composites due to the distribution of load transfer along the fiber direction. Moreover, alkali (NaOH) and sodium lauryl sulphate (SLS) treatments appear to provide an additional improvement in mechanical strength through enhanced interfacial bonding. Morphological studies of fractured mechanical testing samples were performed by scanning electron microscopy (SEM) to understand the de-bonding of fiber/matrix adhesion.

**Key words:** Woven banana fiber, kenaf fiber, mechanical properties, fractography analysis.

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