

Sandwich Structure Composites: Effect of Kenaf on Mechanical Properties

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Abstract : Sandwich structure composites produced by epoxy core and aluminium skin were developed as potential building materials. Interface bonding between core and skin was controlled by varying kenaf content. Five different weight percentage of kenaf loading ranging from 10 wt% to 50 wt% were employed in the core manufacturing in order to study the mechanical properties of the sandwich composite. Properties of skin aluminium with epoxy were found to be affected by drying time of the adhesive. Mechanical behavior of manufactured sandwich composites in relation with properties of constituent materials was studied. It was found that 30 wt% of kenaf loading contributed to increase the flexural strength and flexural modulus up to 102 MPa and 32 Gpa, respectively. Analysis were done on the flatwise and edgewise compression test. For flatwise test, it was found that 30 wt% of fiber loading could withstand maximum force until 250 kN, with compressive strength results at 96.94 MPa. However, at edgewise compression test, the sandwich composite with same fiber loading only can withstand 31 kN of the maximum load with 62 MPa of compressive strength results.

Keywords : sandwich structure composite, epoxy, aluminium, kenaf fiber

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