

EXPERIMENTAL INVESTIGATIONS ON MECHANICAL, WATER ABSORPTION AND ACOUSTIC PROPERTIES OF NATURAL FIBRE REINFORCED HYBRID POLYMER COMPOSITES

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To improve mechanical properties of natural fiber in preparation of composites, heat and alkali treatments to kenaf fibers were performed and effects on mechanical properties were investigated. Compared with other heat treatment temperatures, the tensile strength of kenaf fiber at 140°C exhibited maximum value, which could be attributed to the increase of crystallinity index of fibers after heat treatment. This paper presents the finding of an experimental study on kenaf fibre hybrid composite plates for potential application in shear strengthening of RC beam. In the experimental program, hybrid composite plates had been fabricated using kenaf and carbon fibers with five different mixes i.e., 47% kenaf with 0% carbon; 45% kenaf with 2.5% carbon; 47% kenaf with 5% carbon; 45% kenaf with 7.5% carbon and 45% kenaf with 10% carbon. The physical and mechanical properties of the fabricated hybrid composite plates were then experimentally investigated. Results showed that carbon contents had an influence to enhance the tensile strength of the plates. Hybrid composite plate with 10% carbon content had shown 130% higher tensile strength as compared to that of plate without carbon fibre. The carbon content also had enhanced the modulus of elasticity of plates.

Keywords: natural fiber –kenaf and carbon fibers -alkali treatments-hybrid composite