

## **Mechanical characteristics of green composites of short kenaf bast fiber reinforced in cardanol**

### **ABSTRACT**

In this experiment, thermoset cardanol resin was reinforced with short kenaf bast fibers to produce 100% green composites. Different fiber loadings based on weight ratios (0%, 30%, 40%, 50%, and 60%) were fabricated by the hand layup method followed by compression molding. The results indicated that 50UTK (untreated kenaf fibers) displays the highest mechanical properties (91.9% and 43.4% increment for tensile strength and impact strength, respectively) compared with the brittle cardanol polymer and other combinations of composite. This indicates a great load transfer mechanism by kenaf fiber reinforcement due to good fiber/matrix interface shown in scanning electron microscope (SEM) analyses. On the contrary, short kenaf fiber insertion creates a stress concentration spot at the fiber's end causing slightly lower flexural properties. Besides, high processing temperature has caused damage to the fibers and made further reduction of flexural strength. Therefore, a better load transfer mechanism has been compensated by negative influences of kenaf fiber insertion. In conclusion, 50 wt% of kenaf fiber insertion is found to be the optimum loading for cardanol matrix.