



WATER ABSORPTION OF POLYESTER COMPOSITE SANDWICH REINFORCED CANTULA FIBER AND BANANA STEM FIBER WITH CORN COB CORE

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ABSTRACT

The Water absorption behavior of sandwich structures composed of polyester reinforced cantula fiber and banana stem fiber face sheets bonded to a corn cob core is examined here in. The volume fraction of cantula fiber are 0 %, 5 %, 10 %, and the volume fraction of banana stem fiber are 15 %, 20 % and 30 %..The size of specimens in this study is the length of 80 mm, a width of 80 mm and a thickness of 12.7 mm for the skin and core size corncob 30 mm, according to standard ASTM C – 272. The test was carried out by the density test and swelling test, to measure the volume of the composite using a caliper with an accuracy of 0.05 mm. The results showed that the water absorption of the composites was indicated by changes in weight, swelling and density of the specimen. Water absorption is influenced by fiber volume fraction, fiber direction, fiber type and the interaction of these three factors. Water absorption is more dominantly influenced by the direction of the fiber than other factors. The biggest water absorption occurred in the volume fraction of 30% banana stem fiber and 10% cantula fiber with woven direction. The percentage of water absorption is 38.86% to 33.69%. Likewise, the highest swelling occurred in composite sandwich with the same volume fraction, but with unidirectional fiber direction, namely 16.45% for banana stem fiber and 11.02% for cantula fiber. In contrast to the composite gravity, the smallest value volume fraction was 18.61% for banana stem fiber and 19.93% for cantula fiber.

Keywords: composite sandwich, core, polyester, Corncob, cantula fibers, banana stem fibers, water absorption.

