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Orthophthalic Polyester Composite Reinforced with Sodium Alginate-Treated Anahaw (Saribus rotundifolius) Fibers

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Abstract : Natural fiber reinforced polymer (NFRP) composites have been the focus of various research projects due to their advantages over synthetic fiber-reinforced composites. For this study, ana haw is used as the fiber source due to its abundance throughout the Philippines. A problem addressed in this study is the need for an environment-friendly method of fiber treatment. The use of sodium alginate to treat fibers was thus investigated. The fibers were immersed in a sodium alginate solution and then in a calcium chloride solution afterwards. The treated fibers were used to reinforce orthophthalic unsaturated polyester (ortho-UP) resin. The mechanical properties were tested using a universal testing machine (UTM), and the fracture surfaces were characterized using scanning electron microscope (SEM). Results showed that the sodium alginate treatment had increased the tensile and flexural strength of the composite. The increase in fiber load had also been found to increase the stiffness of the composite. However, sodium alginate treatment did not provide any significant improvement in the wet mechanical properties of the NFRP. The composite is comparable to some commercially available polymeric materials.

Keywords : NFRP, composite, alginate, anahaw, polymer
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