

Influence of Epolene G-3003 as a coupling agent on the mechanical behavior of palm fiber-polypropylene composites.

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Abstract

Composites of palm fiber and polypropylene were compounded using a mixing equipment connected to an extruder. The composites were then injection molded into std. tensile specimens for mech. characterization. The fracture morphol. of the specimens was also analyzed by SEM. It was obsd. that as the fiber content increases the composite modulus also increases, which is an indication for the existence of adhesion to some degree between polypropylene and the much stiffer palm fiber. However, the adhesion is not satisfactory, resulting in decrease in composite tensile strength with fiber addn. The compatibilizer Epolene G-3003 was used to minimize this incompatibility between the wood fibers and the polypropylene matrix. Utilizing Epolene G-3003 improved the fiber-matrix adhesion, resulting in a significant improvement in composite performance. The composite strength with 40 wt% fiber content and 6 wt% compatibilizer almost reached the strength of pure polypropylene.