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EFFECT OF FIBER SIZE, COMPATIBILIZER AND BAMBOO FIBER CONTENT ON PHYSICAL PROPERTIES OF PP-G-MA COMPATIBILIZED POLYPROPYLENE/BAMBOO FIBER COMPOSITES

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An investigation was carried out regarding the effect of fiber size, compatibilizer (maleic anhydride grafted PP) and bamboo fiber content on the physical properties of polypropylene/bamboo fiber composites according to a 2x2x3 factorial design. Composites were prepared in a co-rotating twin-screw Haake rheometer and specimens were injection molded. Effect of the variables on physical properties has been assessed through tensile and flexural modulus, tensile and impact strength, percent elongation at break, fatigue tests and heat deflection temperature (HDT). Morphology of tensile and fatigue fractured specimens was assessed by means of scanning electron microscopy and degree of crystallinity by X-ray diffraction spectroscopy. Physical properties assessed showed to be strongly affected by the variable bamboo content and much less by fiber size in the investigated size range. Fatigue life showed to be strongly increased with incorporation of compatibilizer