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Mechanical Characterization of Mango Peel Flour and Biopolypropylene Composites Compatibilized with PP-g-IA

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Abstract : The present work reports on the development of wood plastic composites based on biopolypropylene (BioPP) and mango peel flour (MPF) by extrusion and injection moulding processes. PP-g-IA and DCP have been used as a compatibilizer and as free radical initiators for reactive extrusion, respectively. Mechanical and morphological properties have been characterized in order to study the compatibility of the blends. The obtained results showed that DCP and PP-g-IA improved the stiffness of BioPP in terms of elastic modulus. Moreover, they positively increased the tensile strength and elongation at the break of the blends in comparison with the sample that only had BioPP and MPF in its composition, improving the affinity between both compounds. DCP and PP-g-IA even seem to have certain synergy, which was corroborated through FESEM analysis. Images showed that the MPF particles had greater adhesion to the polymer matrix when PP-g-IA and DCP were added. This effect was more intense when both elements were added, observing an almost inexistent gap between MPF particles and the BioPP matrix.

Keywords : biopolyproylene, compatibilization, mango peel flour, wood plastic composite
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