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Biodegradability Evaluation of Polylactic Acid Composite with Natural Fiber (Sisal)

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Abstract : Due to increasing environmental pressure for biodegradable products, especially in polymeric materials, in order to meet the demands of the biological cycles of the circular economy, new materials have been developed as a sustainability strategy. This study proposes a composite material developed from the biodegradable polymer PLA Ecovio® (polylactic acid - PLA) with natural sisal fibers, where the soybean ester was used as a plasticizer, which can aid in adhesion between the materials and fibers, making the most attractive final composite from an environmental point of view. The composites were obtained by extrusion. The materials tests were produced and submitted to biodegradation tests. Through the biodegradation tests, it can be seen that the biodegradable polymer composition with 5% sisal fiber presented about 12.4% more biodegradability compared to the polymer without fiber addition. It has also been found that the plasticizer was not a compatible with fibers and the polymer. Finally, fibers help to anticipate the decomposition process of the material when subjected to conditions of a landfill. Therefore, its intrinsic properties are not affected during its use, only the biodegradation process begins after its exposure to landfill conditions.

Keywords : biocomposites, sisal, polilactic acid, Polylactic Acid (PLA)
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