

Title

BIODEGRADABLE THERMOPLASTIC COMPOSITES BASED ON PHB AND NATURAL FIBRES

Abstract text

Regarding the general increasing demand of bio-based and biodegradable materials for its use as an alternative to traditional plastics, more research is required to develop bio-based materials that can be processed by conventional processing technologies, and fulfill the requirements for different applications.

In the specific case of the automotive industry, aspects like thermal resistance or mechanical performance should be improved through investigation for external and internal use of the new materials in automobiles.

This work deals with specific developments based on the improvement of polyhydroxybutyrate (PHB) mechanical properties. The technical performance of the material is being improved with the addition of natural reinforcements, among others.

Different types of mats and fabrics of natural fibres were used to produce PHB composites by compression moulding at an initial state, in order to study the improvement in terms of flexural properties.

The biodegradable base material is a commercial grade of PHB provided by Biomer. Different sandwich structures were designed and produced in a hot platen press. Mats and fabrics of different grammages made of flax and kenaf were used as reinforcements. The biocomposites obtained were characterized by flexural tests.

Both flax and kenaf mats improved considerably flexural properties of PHB, acting as reinforcements of the base material, leading to flexural modulus up to four times the original value. Flexural strength was also improved when increasing the mat grammage of flax mats. However, in the case of flax fabrics, they did not exert the same reinforcement effect on PHB in terms of flexural properties.

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Keywords

BIOCOMPOSITES, NATURAL FIBRES, POLYHYDROXYBUTYRATE

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