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Problem / assignment

The main assignment was perform a research This research intended to perform experimental evaluations around polymer properties of PHBV when incorporated with natural fibres in different proportions. The main properties evaluated were thermal properties, mechanical properties and biodegradability. The fibres incorporated are wood and hemp fibres.

Used methods / project phases

*Methods and phases: 1-Definition of the scope of the project: study of theory.
2-Material preparation: drying and storage.
3-Composite Extrusion: twin screw extruder.
4-Samples moulding: injection moulding and compression moulding.
5-Thermal Study: Differential Scanning Calorimetry.
6-Mechanical Properties: ISO 178 – Bending Properties, ISO 179 - Charpy Impact Properties, ISO 527 – Tensile Tests.
7- Biodegradability: burring in soil for 10 weeks*

Results

The thermal study showed that the fibres decrease the crystallization degree comparing with the Neat PHBV. The mechanical results showed that with the increase of the fibre content is possible to obtain a stiffer and less elastic material. The results also indicate a low compatibility between fibres and PHBV surfaces. The biodegradability was improved with hemp comparing with Neat PHBV and with wood compounds. Is suggests using additives, as plasticizers, to improve the compatibility between the different surfaces, for a next study.