

LET'S PLAY TO BE MORE SUSTAINABLE

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Polymers play an important role in providing quality, comfort and safety in modern life-styles. The advantage of polymers compared to other materials can be attributed to their diverse properties, easy processability, high strength/density ratios, resistance to chemical and physical degradation, and low cost.

However, the increasing concern about environmental issues derived from the use of the petroleum based materials is promoting the development of environmentally friendly polymer materials. Biodegradable plastics offer important contributions by reducing the dependence on fossil fuels.

On the other hand, there is a substantial interest to utilize waste and residues originating from agricultural processes as reinforcement in polymer composites. This increased interest is due to their advantages over synthetic and mineral fillers: low cost, low density, non-toxicity, high specific properties, non-abrasive during processing and easy processability.

Nowadays, the bioplastics industry is becoming more present in the children's sector, from toys to childcare products. The combination of natural fibres or wood flour mixed with biodegradable, or bio-based plastics is a potential and attractive alternative for these traditional industries where final consumers are more respectful with the environment and parents want their children acquire an ecological vision of the world.

For this reason, the aim of this work was to develop composites by combining natural fillers, particularly, almond shell, with commercial biodegradable resins like poly(lactic acid) (PLA), starch-based polymer, polybutylene succinate (PBS), polyhydroxyalkanoate (PHA) or polycaprolactone (PCL) and study the influence of the almond on the properties of the polymeric matrix. The biocomposites were prepared in a twin-screw extruder and pellets obtained were injected to study the physical, mechanical and thermal properties.