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COMPOSITES FROM RECYCLED WOOD AND PLASTICS

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Abstract

At present, the recycling plastic materials is mostly done using homogeneous polymers. Therefore a separation of plastic objects from a municipal collection is necessary before recycling operations. The easiest way of separations is by flotation in water, due to the different densities of different plastics with respect to water. This means that all the plastic materials are separated in a "light fraction" mostly of polypropylene and polyethylene and in a "heavy fraction" mainly of poly(vinyl chloride) (PVC) and poly(ethylene terephthalate) (PET). In this work, the recycling of light fraction has been studied, considering also the effect of the addition of wood fibers, an "environmental friendly" filler, and the effect of three compatibilizing agents.

The addition of wood fibers (20-30%) leads to almost the same mechanical properties with recycled polyethylene in the case of tensile strength and maximum elongation, but the elongation modulus decreases in the same time with the increase of the filler content. In order to improve these properties and to achieve a better compatibility between the recycled polyethylene and filler, three functionalized polypropylene were used as adhesion promoters. These copolymers improve the mechanical properties at a low concentration.

Keywords: recycled polyethylene, wood flour, composite materials

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