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Characterization and Degradation Analysis of Tapioca Starch Based Biofilms

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Abstract : In this study, tapioca starch which acts as natural polymer was added in the blend in order to produce biodegradable product. Low density polyethylene (LDPE) and tapioca starch blends were prepared by extrusion and the test sample by injection moulding process. Ethylene vinyl acetate (EVA) acts as compatibilizer while glycerol as processing aid was added in the blend. The blends were characterized by using melt flow index (MFI), fourier transform infrared (FTIR) and the effects of water absorption to the sample. As the starch content increased, MFI of the blend was decreased. Tensile testing were conducted shows the tensile strength and elongation at break decreased while the modulus increased as the starch increased. For the biodegradation, soil burial test was conducted and the loss in weight was studied as the starch content increased. Morphology studies were conducted in order to show the distribution between LDPE and starch.

Keywords : biopolymers, degradable polymers, starch based polyethylene, injection moulding
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