Abstract

This research targeted the manufacturing the sample of the environmentally friendly wood plastic composite that the matrix material of this was poly lactic acid biodegradable plastic and modified with Abies wood flour and paper pulp fibers. For evaluate the scientific results of this research, the properties of the manufactured samples of this plastics plant were compared with the samples made by one of the most common synthetic plastics (Low Density polyethylene). Beside, for reach to the best properties of the new composite, were used of the important and effective factores as variable, like that the percent of the mixing matrix _ filler and also form of the wood material. Based on this, four levels considered at mixing percent and two levels of wood flour and paper pulp fibers for the form of the filler. Method of the making of these samples was like to the usual laboratory Method of wood plastic. Samples were made with poly lactic acid, by flat press and the samples were made with poly light ethylene by injection press according to the ASTM standard were manufactured. In this research in addition to the test the physical and mechanical properties, also morphological properties of the new products with help of electronic scanning were studied. According to obtained results on the mechanical properties of the samples made by poly lactic acid, the most resistance was related to the filler of the paper fibers and with increasing the amount of the paper fibers, resistances increased. Also in the physical properties, the best of samples was related to filler of wood flour and with increasing the amount of the wood flour percent, the physical properties increased. According to the obtained results from of this investigation and total compared with between two polymer of light polyethylene and poly lactic acid, the best resistance is related to the samples made by light polyethylene.

Key words: plant polymer, polylactic acid, wood plastic.

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