



University of Zabol

Graduate school

Faculty of Natural Resource

Department of Wood Science and Technology

**The Thesis Submitted for the Degree of Master of Science
(In Composite Wood products)**

**Effect of Filler Material and amount of Maleic
anhydride on Physical-Mechanical Properties of
Wood Plastic Composite**

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Abstract

In this study, the effect of type of filling material and the amount of maleic anhydride coupling agent material (MAPP) on the physical and mechanical properties of wood-plastic composites were examined. For this purpose, of three types of lignocellulosic material as a filling material includes: populus deltoides, canola stalks and cotton stalks with polypropylene were mixed together. Also for compatibility between the polymer matrix and the filler material of the MAPP compatibilizer material at three levels (0, 2 and 4) polypropylene wt% were used. Material mixing process using a two mardoon extruder at temperature of 190 ° C, Were mixed together in speed of 30 rpm and the samples were made using injection molding way. Physical and mechanical properties tests, were performed on specimens according to ASTM standard. The results showed that the MAPP performance was influenced by the biometric and chemical characteristics of fillers and in different fillers was showed different results. Also,,the best bending resistance was related to populus filler. Comparisons between different fillers showed that the maximum impact of maleic anhydride polypropylene was on the physical and mechanical properties of populus filler. And the impact of MAPP to the level at 4% caused to increase the mechanical properties and improve the physical characteristics was in three fillers of canola, cotton and poplar straw.

Key Words: Lignocellulosic Materials, Maleic Anhydride, Populus Filler, Physical and Mechanical Properties