Effect of Lignin Mixing Method on Physical and Mechanical Properties of Wood Flour- Polypropylene Composites

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In this study, the effect of two lignin mixing methods on physical and mechanical properties of wood flour- polypropylene composites was investigated. Kraft lignin was extracted from black liquor by acidic method and was mixed with wood flour by physical and chemical methods with ratios of 2, 5 and 10 percent (based on wood flour dry weight). The composites were produced by hot press method after mixing of wood flour, lignin and polypropylene at presence or without MAPP. The physical and mechanical properties of prepared samples were measured according to standard methods. In general, the results showed that adding lignin to composites decreased water absorption in both methods. Also increasing lignin from 2 to 10 percent increased impact strength of composites with or without MAPP. Flexural strength of the composites differed depending on mixing method. Increasing of lignin decreased flexural strength of the composites without MAPP in the physical mixing method where as in chemical mixing method it was increased. It is to be noted that the composites with 5 percent lignin, made with physical mixing method and with MAPP exhibited higher flexural strength than other composites.

Keywords: Wood flour- polypropylene composites, Compatibilizer, Kraft lignin, Physical mixing, Chemical mixing.

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