Abstract

The flexibility of wood plastic products than to the kind of filling material has caused a wide range of wooden, lignocellulosic and fiber materials are usable in the production of this product. Also, in parallel the scientific developments to reinforcement and strength of the bond between filler and the context, to improve the physical and mechanical properties, have been presented materials and numerous approaches.This investigation with aim of evaluation the possibility of using of textile waste fibers and effect of Nano clay particles content on physical and mechanical properties of wood plastic composite were performed. For this purpose, wood flour and polypropylene with a weight ratios of 50 to 50 with the fiber textile in four levels at (0, 5, 10 and 15 percent) and Nano clay in three levels at (0, 2, 4 percent) and compatibilizer at rate of 3 percent, by extruder mill (two mardoon non-convergent) at temperature of 160 ° C were mixed and then the test samples by using of injection molding method were made. The mechanical properties included the texture and bending strength, texture and bending modulus and groovy impact strength and physical properties such as water absorption and 2 and 24 hour thickness swelling according to ASTM standard were measured. Also X-ray diffraction test (XRD) in order to determine how the distribution of Nano clay particles in composite and imaging scanning electron microscope (SEM) was performed to evaluate the fracture surfaces. In general, the results showed that, adding fiber textile, significantly were caused to improve the mechanical properties such as bending and texture modulus and bending and texture strength and weaken the physical properties of wood-plastic composite. Also the results showed that the physical and mechanical properties of wood-plastic composites, excluding the groovy impact strength, have improved with increasing Nano clay content. Morphological studies of composite, with method of X-ray diffraction test (XRD) showed that the distribution of Nano clay particles in the polymeric context, were of type of the Intercalation, and by increasing the Nano clay particles the distance between the layers have increases.

Key words: Fiber textile, Wood plastic composite, Length of fibers, Atrophy coefficient, Scanning electron microscope, Nano clay.

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The effect of using scrap fabric and nanoclay particles on the physical and mechanical properties of wood plastic camposite

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