Synthesis and Characterization of Medium Density Fiber Board by Using Mixture of Natural Rubber Latex And Starch As An Adhesive

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ABSTRACT

In the present work natural rubber (NR) latex and starch was added as an adhesive to synthesize the medium density fiber (MDF) board panels. The studies are aimed on increasing the mechanical and physical properties of MDF by using NR latex and starch as an adhesive. Three combinations which are 5 g of starch with 15 g of NR latex, 10 g starch with 10 g of NR latex and 15 g of starch with 5 g of NR latex were prepared and the results obtained were compared with the MDF prepared by using urea formaldehyde adhesive. Adhesive preparation trials, physico-chemical testing of adhesives and mechanical testing of adhesives bonded to MDF were done. The morphology of the specimens was characterized by using thermo gravimetric analysis (TGA) and fourier transform infrared spectroscopy. The mechanical testing results of MDF obtained from adhesive prepared using 5 g starch with 15 g NR latex shows higher mechanical strength in comparison to two other formulations. From the TGA graph, it was observed that the thermal stability of the MDF boards having higher starch percentage is higher in comparison to others. The results of this study indicated that starch can be used as a viable alternative binder with NR latex.

KEYWORDS: Medium density fibreboard (MDF); Natural rubber latex (NR); Urea formaldehyde (UF); Thermo gravimetric analysis (TGA); Fourier transform infrared spectroscopy (FTIR)

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