University of Zabol
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The Thesis Sumbitted for the Degree of Master of Science (In Composite Wood products)

Manufacturing of Wood-Plastic Composite By Waste Tape of Poly Vinyl Chloride (PVC) Binder Edge Machine

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Abstract

In this research, possibility of manufacturing the wood plastic composite using of wood particles from particle board factory and waste of poly vinyl chloride tape (PVC) were evaluated. Variable factors of this evaluation, was amount of use of PVC wastes to general weight of board in 5 levels at 30- 40- 50- 60- 70 percent. Press time factor in three levels at 10, 12 and 14 minute, type of the wood particles factor in three levels of large, fine and mix 50- 50 and also fix factors were, press temperature factor in 230 ̊c temperature and although of maleic anhydrate poly propylene (MAPP) as coupling agent with fix amount of 5 percent weight of PVC were used in all of boards. Boards made with dimensions of 30 × 30 × 1 cm in hot press. After producing the testing composites, characteristics of mechanical properties such as rupture strength and modulus of elasticity according to the 310 EN standard, internal bonding according to the 319 EN standard, withdrawal of screw according to the 320 EN standard and properties of physical tests include water absorption and thickness swelling 2 and 24 hour and water absorption of 2 hour boiling water according to the 317 EN standard were measured. The associated data's were analyzed using a completely randomized design. Obtained results showed that use of large wood particles cause the improved the bending strength and modulus elasticity and as well as increasing in the time have negative effect on internal bonding. Minimum water absorption and thickness swelling were seen in boards with minute and large wood particles. As a result, the best combination conditions in boards made with 10 minute time, large wood particle and 50/50 mixture percent were observed.

Keywords: Wood Plastic Composite, Poly Vinyl Chloride, Wastes, Binder Edge Machine, Physical and Mechanical Properties.