Abstract

The aim of this research is the possibility of using melamine veneer paper waste and cutting edge medium density fiberboard and particleboard waste for making three-layer particle board. In this study, the amount of melamine veneer paper waste in the core layer was as 0, 20, 40, and 60 percent based on oven dried weight of UF adhesive to save and reduce resin consumption. Cutting edge waste was used at four levels of 0, 30, 60 and 100 percent, as fiberboard waste in the surface layer and particleboard waste in the core layer. Wood particles was pressed with using a laboratory hydraulic press, at a temperature of 176 ° C, 150 seconds pressure time and 25 kg per square centimeter pressure. 16 treatments and three replications were considered and a total of 48 boards in sizes 1/6 × 40 × 45 cm was built. Mechanical and physical properties (modulus of rupture, modulus of elasticity, internal bonding, screw withdrawal resistance, density, water absorption and thickness swelling after 2 and 24h soaking in water) of the produced boards were measured according to EN standards. The effect of independent and interactions of each of the variables was studied on the properties and analyzed at 95 percent with using SPSS software and variance analysis factorial design. The results showed that increasing wood particle waste resulted in increasing the modulus of rupture, modulus of elasticity and internal bonding. The results also indicated that density, water absorption and thickness swelling after 2 and 24h soaking in water improved with increased wood particle waste. The results show that increasing of melamine veneer paper waste resulted in decreasing modulus of rupture, modulus of elasticity and internal bonding. The results also indicated that density, water absorption and thickness swelling after 2 and 24h soaking in water increased with increased melamine veneer paper waste.

Key words: Particle board, Melamine veneer paper waste, medium density fiberboard waste, particleboard waste.

University of Zabol
Graduate school
Faculty of Natural Resources
Wood and Paper Science Department

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

Efect of melamine veneer paper use on the properties of particleboard made from waste Medium-density fibreboard and particleboard

Supervisor:
phD. Mohammad Shamsian

Advisors:
phD. Saeid Reza Farokhpayam
phD. Hedayatallah Aminian

By:
Ali Bbabazadeh Lehi

October 2016