Abstract

In this research measuring the formaldehyde gas emission from particle board and reduce its emissions by using the Urea additive were evaluated. The variable factors of this evaluating, is the percent of Urea as an additive material to particle board that were made in case of three layer in 4 levels at 3, 6, 9 and 12 percent by dry weight of adhesive (the Urea as an additive material were added to particle board and adhesive in case of powder). The using percent of adhesive were in three levels at 8, 9 and 10 percent by dry weight of wood particles. With using of factorial test in mold of completely randomized model, the boards were made in hot press with 45×45 ×15 diameter. The test of measuring the amount of concentration of emission the formaldehyde gas according to the European standard (EN 717-1) for particle board were applied with desiccator way was done agree to three country of Australia, New Zealand and Japan under the (AS/ NZS 4266.16:2004) abbreviation abject. This way with name of desiccator way of Japanize standard were known for particle board manufacturing. The permitted levels of formaldehyde gas emission within the 95% border limit with the E1≤ 1.8 mg/ l and E2≤ 5.4 mg/ l diffusion classified. That in this research, the amount of concentration of emission the formaldehyde gas were received to limit of diffusion classified of E2. The internal bonding, modulus of rupture, modulus of elasticity water absorption and thickness swelling 2 and 24 hour and measuring the density of testing board were evaluated. Beside that the ANOVA one-way analyze between the treatments were significantly, were used of Duncan way comparison between the averages. The results showed that with increasing the percent of resin and increase the amount of percent of Urea additive, formaldehyde emission decreased and also internal bonding, modulus of rupture, modulus of elasticity and density were increased. Therefore water absorption and thickness swelling 2 and 24 hour were decreased.

Key words: Decreasing of formaldehyde emission, Pollutant, wooden products, Urea formaldehyde resin, Urea additive.

University of Zabol

Graduate school
Faculty of Natural resource
Department of Wood Science and Technology

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Reduction of Emissions of Formaldehyde from Urea-Formaldehyde (UF) Resins Using Boards Made With Urea Additive

Supervisor:
Dr. H.R. Mansouri

Advisors:
Dr. A. R. Samzadeh

Dr. B. Nosrati

By:
M. Asefi Hedayat Abad

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