

Abstract

In recent years the use of medium density fiberboard (MDF) Iran has strongly grown ever find a large proportion of imported raw sheet or coating of the product supplied. The use of these products leads to more investment to boost production in the country where it already has 3 factories for the manufacture of this product, worked in the respectively. Fiber board production line, producing a significant amount of debt due to the weakness of the core layer, the low modulus of rupture and elasticity, internal low adhesion, peeling and warping back marked to market and the ability to not meet. One of the main reasons for such flaws, poor performance in the heat transfer between the layers during hot pressing board and partially as a result of interaction with other important factors and most influential in the properties of the board as the moisture content fibers are used during the press resin . Research on the use of new technologies and materials to eliminate the phase of intensive timber production is necessary papers. The metallic nanoparticles for good heat transfer characteristics are taken into consideration. Including zinc oxide nanoparticles with the aim of better and faster heat transfer and thus the cake profiles of lower temperatures and less time pressed board was added to the tissue. The research was conducted in two stages, The effects of zinc oxide nanoparticles on the heat transfer rate during hot pressing evaluated placed And secondly the impact of nanotechnology, fast closing and opening press cake moisture on the physical and mechanical properties of the boards is reviewed. The results showed that the nanoparticles have a positive effect on the heat transfer rate and the percentage of nano-cake thickness increases, this property is also improved, The maximum heat transfer rate of the boards are made with the highest percentage of nanotechnology in this study. In a similar duration, at least to the level of control is the brain cake. The results show that the highest flexural strength and modulus of elasticity of the boards with the highest percentage of nanotechnology, the cake moisture content and duration of the closure of the mouth presses are made. The boards are made with the highest percentage of internal bond of nanotechnology, the cake moisture content and the time span of the press is closed. Resistance to water absorption boards were significantly affected by the change of the minimum water absorption of nano boards devoted most of nanotechnology. The lowest thickness swelling of the boards had the highest percentage of nanotechnology, the cake moisture content and the time span of the press was closed. Reduce the time of closing and opening press cake moisture content was increased water absorption and thickness swelling.

Key words: Nano zinc oxide, medium density fiberboard, Phase heat transfer heat press, urea-formaldehyde resin



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