Abstract

Wood has different strength against physical destroying agents, such as fire and some treatments to improve its durability. In this study, the effect of temperature press and different fire retardent on the physical and mechanical properties of medium density fiberboard (MDF) fire retarded with borax, boric acid and ammonium sulphate were studied. Temperature press at five levels (135, 150, 165, 180, and 195) and borax, boric acid and ammonium sulphate at five level (0, 1/5, 3/88, 5/83 and 7/77 %) according to the specified proportions according to the RSM software were used as variables in this study. the pressing time 9 min for all treatments were considered fixed. Therefore resistance tomechanical (internal bonding (IB), modulus of rupture (MOR), modulus of elasticity (MOE)) and fire (Lgnition time, Fire endurance and Loss weight) andphysical (thickness swelling (TS) and water absorption (WA) after 2 and 24 h immersion in water) board andstatistical analysis was performed using RSM software. The results that the fire retardants increased the fire resistance in the MDF. Also, it caused a significant reduction in the water absorption and the thickness swelling. Treatment with the asid boric, borax and sulphate ammonium decreased significantly the mechanical properties of the treated boards. It concluded by fire retarding material without disadvantageous effects on environmental, wood anti-combusting property may be improved. The test also was conducted and density profiles and FTIR. results showed that by increasing the heat in a fixed amount of material fire retardant, density profiles levels to the Max.

Key words: Medium density fiberboard, Fire retardant, Press Temperature, physical and Mechanical properties.

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The effect of fire-retarding agent type and press temperature on the fire resistance of medium density fiberboard

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