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(CMP, NSSC)

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(E_mail:Asghar_Tarmian@yahoo.com)

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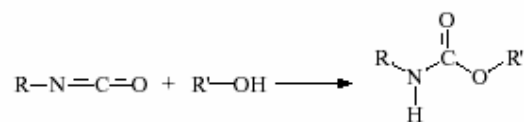
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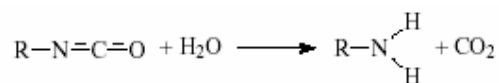
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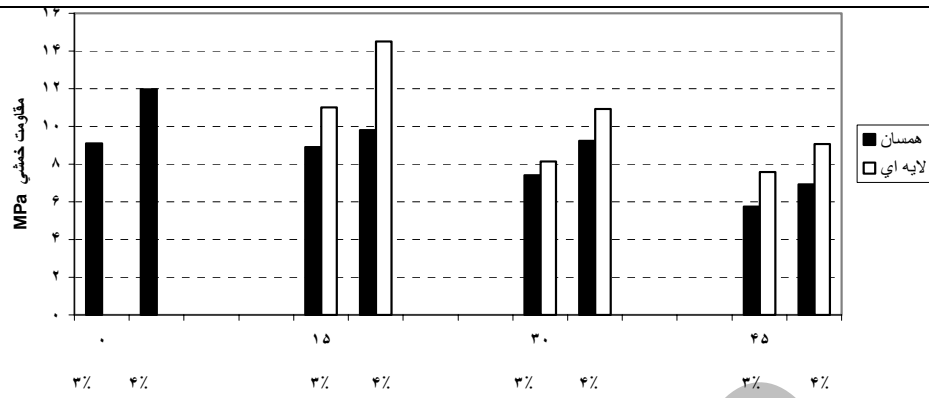
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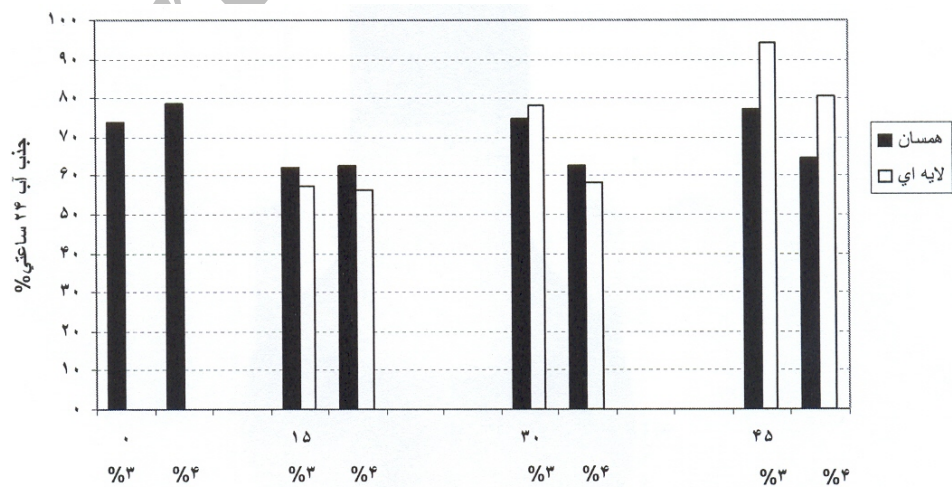
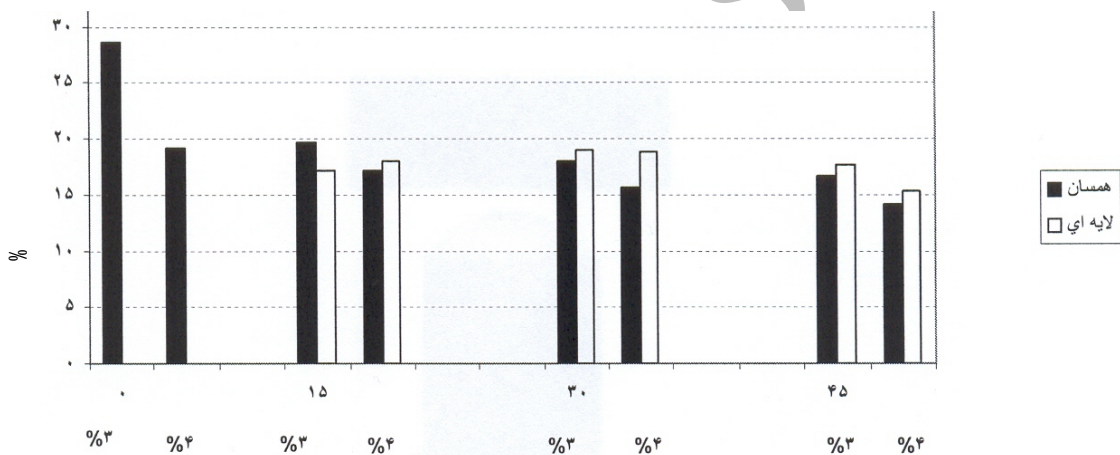
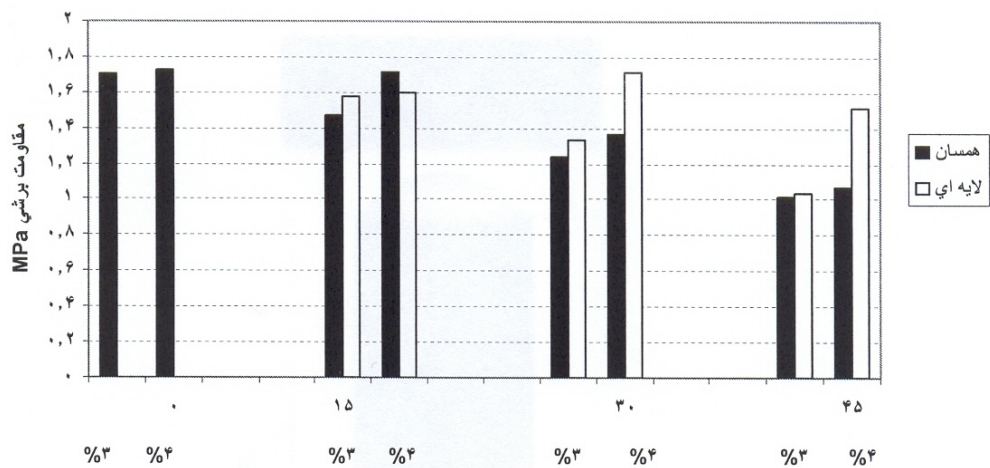
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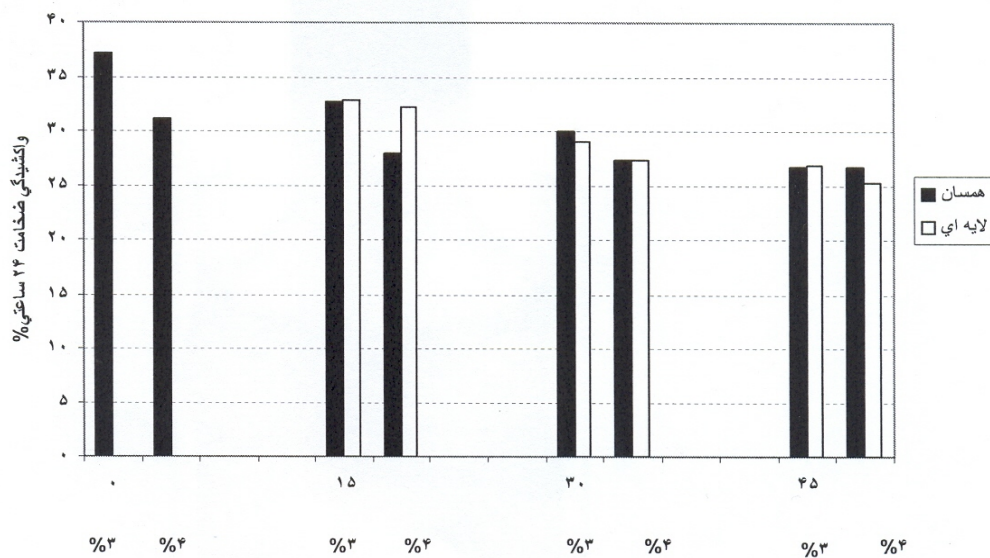
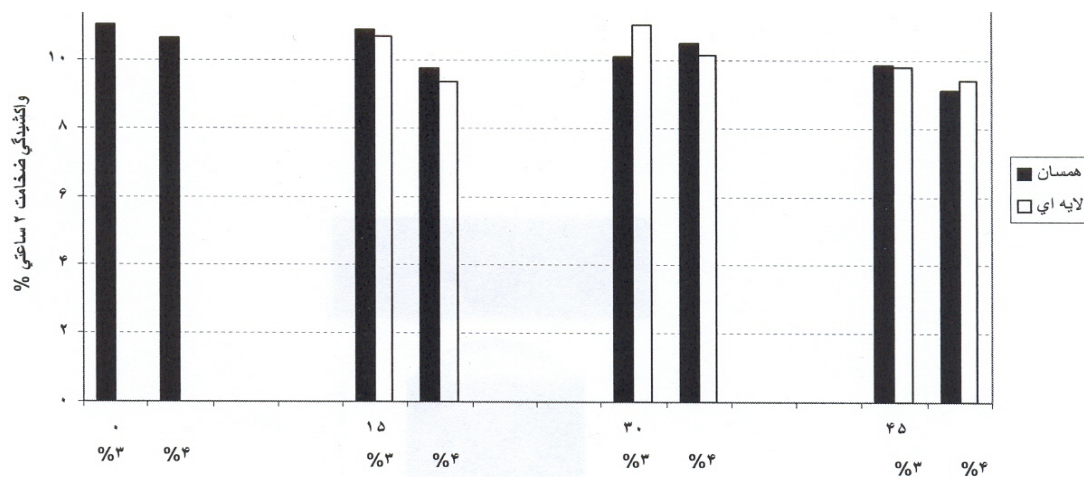
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An Investigation of Practical Properties of Particleboard Produced with Methylene Diphenyl Diisocyanate (MDI)

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Abstract

In this investigation, particleboard manufacturing with the use of Methylene Diphenyl Diisocyanate (MDI) adhesive has been studied. In order to evaluate the bonding efficiency of MDI with inorganic materials, paper sludge of Mazandaran wood and paper industries (CMP ,NSSC) ,containing inorganic about 28 percent, was mixed with wood chips at 0,15,30 and 45 percent by weight. Single-layer particleboard as well as three-layer particleboard (paper sludge as a surface layer) were produced. Methylene Diphenyl Diisocyanate (MDI) adhesive was applied in two levels of 3 and 4 percent. Other factors such as, press pressure, press time, mat moisture, thickness and board density were the invariable factors. Physical and mechanical properties including bending strength, shear strength, thickness swelling and water absorption after 2 and 24 hours of immersion were tested. The results revealed improvement in all board properties resulted from more adhesive use. Using more paper sludge caused a slight decrease in shear and bending strengths while a slight improvement in thickness swelling. The lowest thickness swelling was observed in the three-layer particleboard.

Keywords: Paper sludge, Methylene diphenyl diisocyanate (MDI), Single-layer particleboard, Three-layer particleboard, Bending strength, Shear strength, Water absorption, Thickness swelling.

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