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Archive of SID

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ANSI A / DIN

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E-mail: h\_abdolzadeh@yahoo.com : : : \*

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OH

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(.)

$$\text{WPG (\%)} = [(W_1 - W_0) / W_0] 100$$

$$\begin{aligned} & \text{(gr)} = W_1 \\ & \text{(gr)} = W_0 \end{aligned}$$

( ) Tarkow Stamm

(.)

( )

( ) Tarkow .

( ) Youngquist

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( ) Bank Rowell

Pallmann

Imamura .

(EMC)

( )

Gomez-Bueso .

( )

Papadopoulos .

( )

( ) Rowell

( ) Rowell .

A<sub>3</sub> ( / ) A<sub>2</sub> ( ) A<sub>1</sub> : ( / )  
( ) S<sub>1</sub>  
( ) S<sub>2</sub>

kg/cm<sup>2</sup>

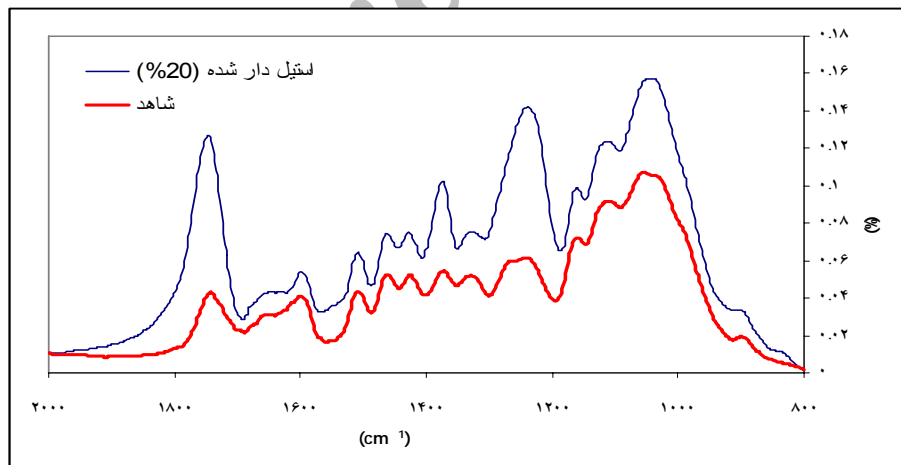
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- Equilibrium Moisture Content

FTIR  
 (  $\text{cm}^{-1}$  )  
 (CH<sub>3</sub>-CO)  
 .( )

DIN  
 DIN  
 INSTRON-4489  
 D  
 WOLPERT D.6700  
 ASTM  
 ISO  
 (CRD)  
 SPSS



FTIR

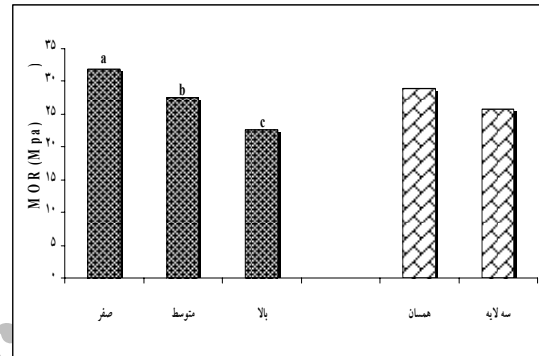
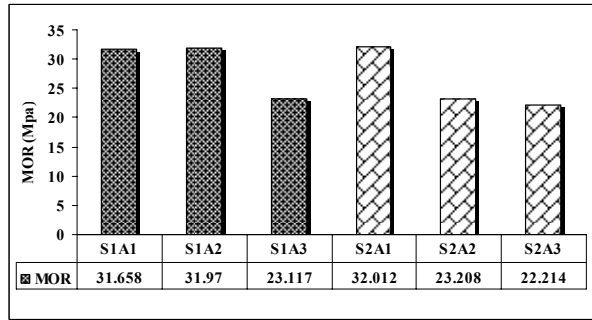
(MOR)

MOR

Modulus of Rupture

MOR

MOR



MOR

MOR

MOE  
MOE

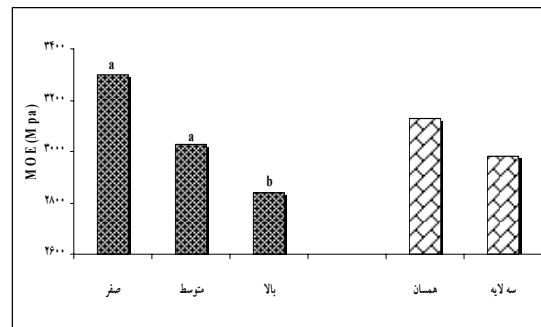
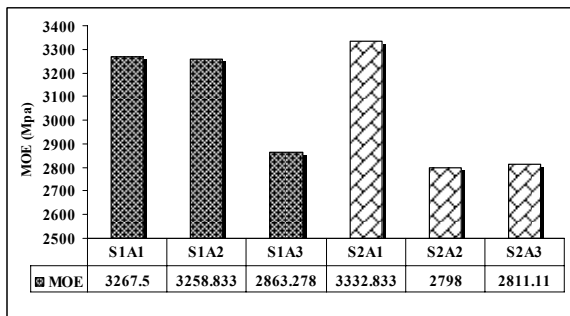
(MOE)

MOE

MOE

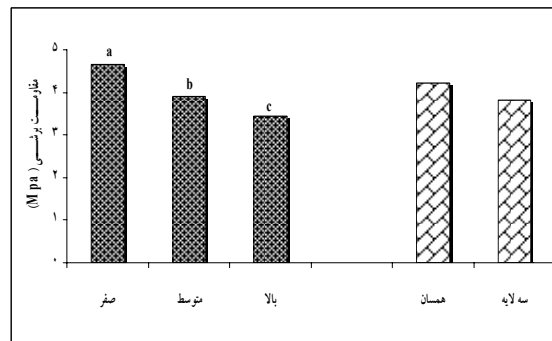
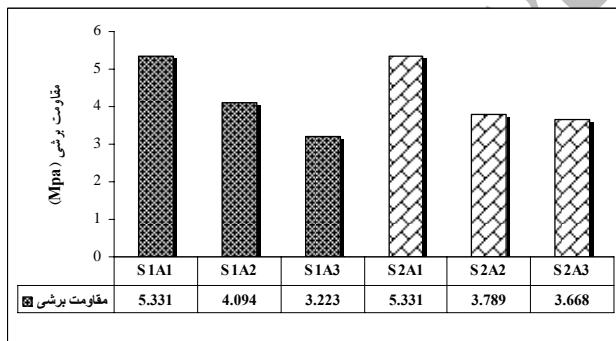
MOE

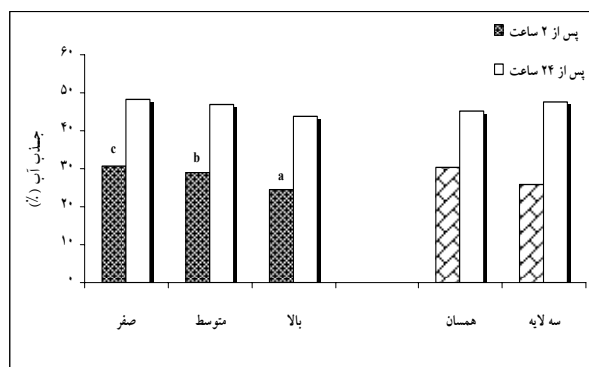
Modulus of Elasticity



MOE

MOE



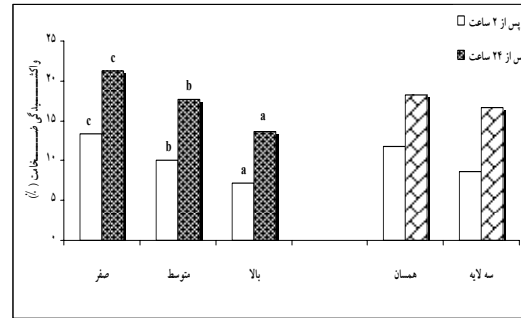
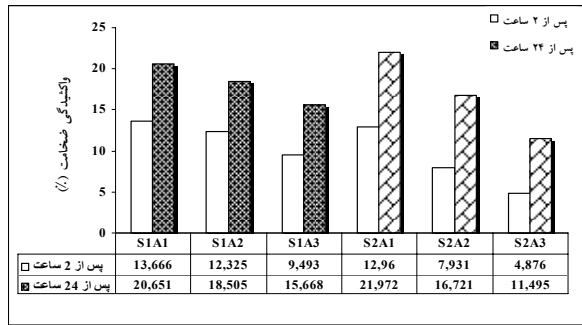


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## The effects of acetylated poplar particles on mechanical and physical properties of three and single layer particleboards

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### Abstract

The capability of acetylated poplar particles in manufacturing particleboard was investigated. The acetylation degrees at high, medium, and zero (control) levels and position of treated particles were considered as variables. Then the effects of these variables on practical properties of manufactured boards were investigated. The results indicated that application of 50% acetylated particles (on the basis of boards' weight) caused to improve dimensional stability of manufactured boards up to 50 %, however the strength properties decreased to some extent. Increasing acetylation degree caused to enhance dimensional stability while the mechanical properties were decreased. The application of acetylated particles on surface layers led to bending strength loss in comparison with single layered boards. Although utilization of acetylated particles caused to decrease bending strength but it remains still above the levels established by standards such as DIN 68763 and ANSI A 208/1 – 1993 and resulted particleboards have suitable and acceptable properties. The results showed less water absorption and thickness swelling three – layer particleboard in comparison with single-layer particleboards after immersing in water for 2 and 24 hours.

**Keywords:** Poplar, Three – layer particleboard, Acetylation, Modulus of rupture, Shear strength, Dimensional stability

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