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(// : // :)

ISO ASTM

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()

pH

pH

.()

)

.(

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Olivers () Roffael

() Sellers ()

OSL

%

() Lantzy Lewis

() Vazquez

)

.(

Nada () Ozmen Cetin

() Alonso ()

(B)		(%)(A)	
B1		A1	
B2		A2	
B3		A3	
B4		A4	

×

pH= / %

Kg/Cm²

ISO

ASTM

...

(MPa)	(MPa)		(MPa)		(%)		(%)		(%)
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
**	ns	ns	ns	ns	ns	ns	ns	ns	

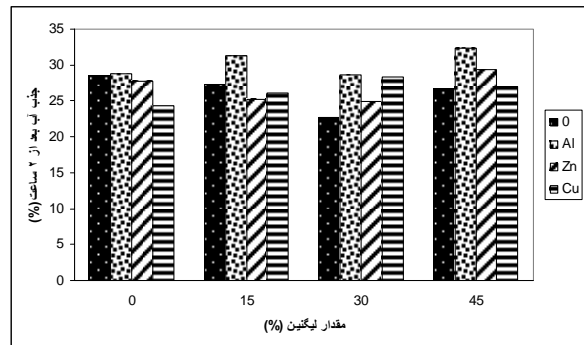
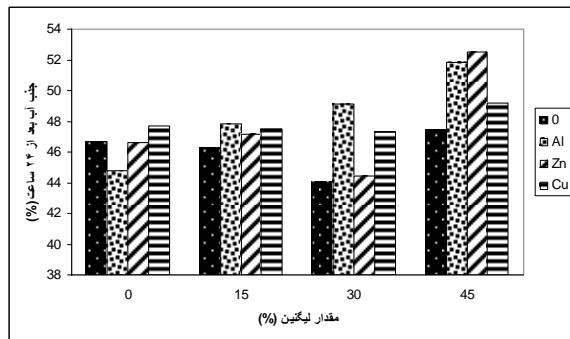
ns

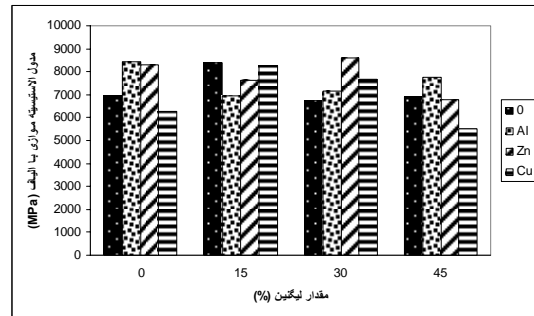
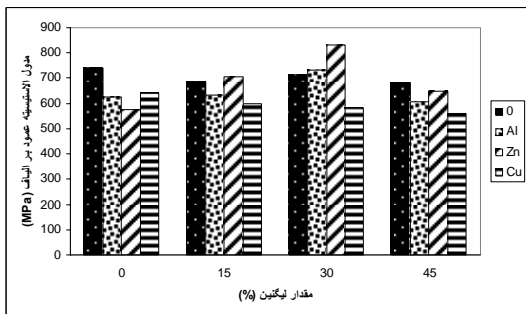
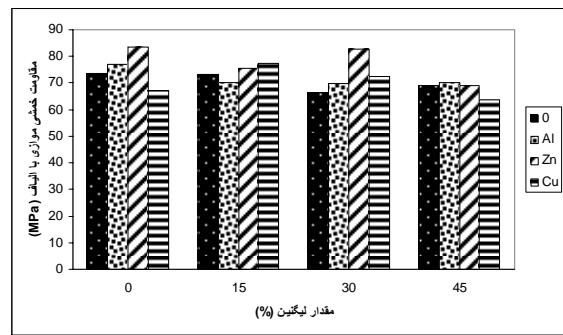
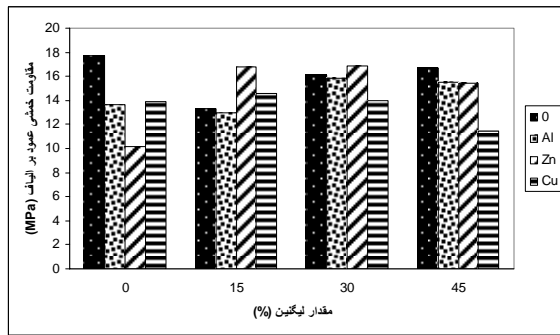
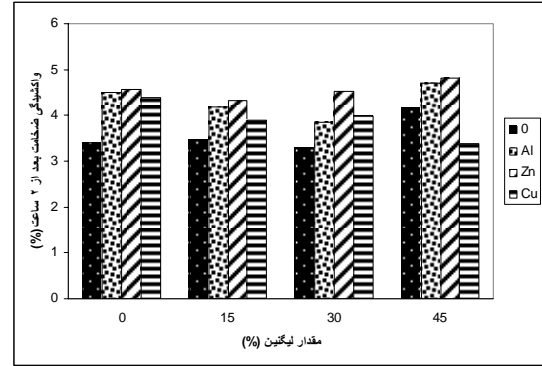
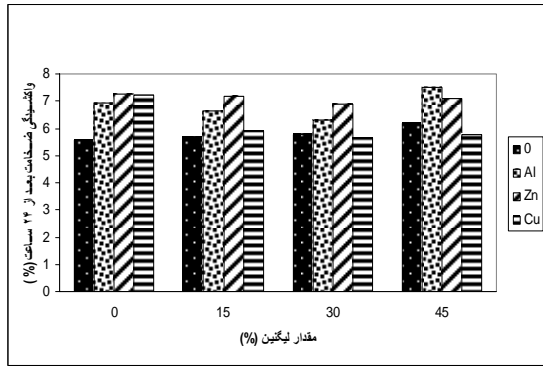
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(MPa)	(MPa)		(MPa)		(%)		(%)		(%)
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
/	/	/	/	/	/	/	/	/	
ns	ns	ns	ns	ns	**	**	ns	ns	

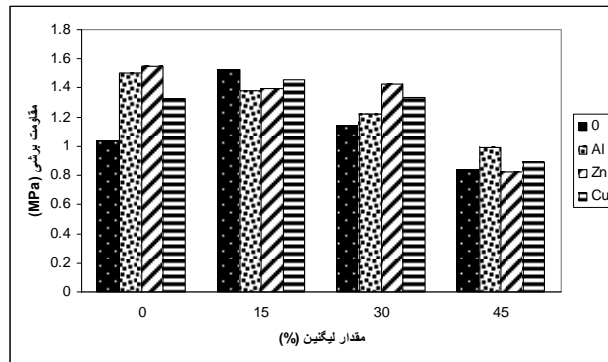
ns

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() Kopitovic Klasnja



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Utilization of Kraft Lignin with Metal ions Catalyst as Filler-Extender in Urea Formaldehyde Resin for Plywood Manufacture

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Abstract

Nutritional and economic value of wheat flour necessitates the utilization other potential material such as by-products of pulp and paper industry, especially Kraft lignin, as possible filler-extender in urea formaldehyde resin, in the presence of metal ion catalysts. The variables were the amount of Kraft lignin powder and the type of catalyst. Water absorption and thickness swelling of samples after being submerged in water for 2 and 24 hours, modulus of elasticity and bending strength in parallel and perpendicular to grain and shear strength were evaluated according to AFNOR, ASTM and ISO standards and the results were analyzed. The results of this study show that the water absorption and dimensional stability of the boards examined improve with using 30 percent of lignin Kraft powder in the absence of catalyst and, furthermore, mechanical properties of the boards will improve if 30 percent of lignin Kraft powder is used together with zinc acetate catalyst.

Keywords: Plywood, Kraft Lignin, Urea formaldehyde resin, Metal ions catalyst, Filler, Extender