
(OSB)

*

(// : // :)

(

)

ASTM D1037

()

()

)

(

()		
	(R)		
(A)		
	(B)	
mm/s			(OSB)
	kp/cm ²		
/ gr/cm ³			
		[]	
(MOE)			
(IS)	(MOR)		[]
(TS)	(WA)		
ASTM			
	D1037		
(CRD)			
	(DMRT)	(Populus nigra)	
		()	

(cm²/gr) a=2(lw+lt+tw)/wltd				(mm)	(mm)	(mm)
	α=l/w	J=w/t	S=l/t			
/		/	/	/		

() (PF)

PH	°C			
		(cp)	(%)	(gr/cm³)
/			/	/

F				
/ **	/	/		(A)
/ **				(B)
/	/	/		A×B
	/	/		

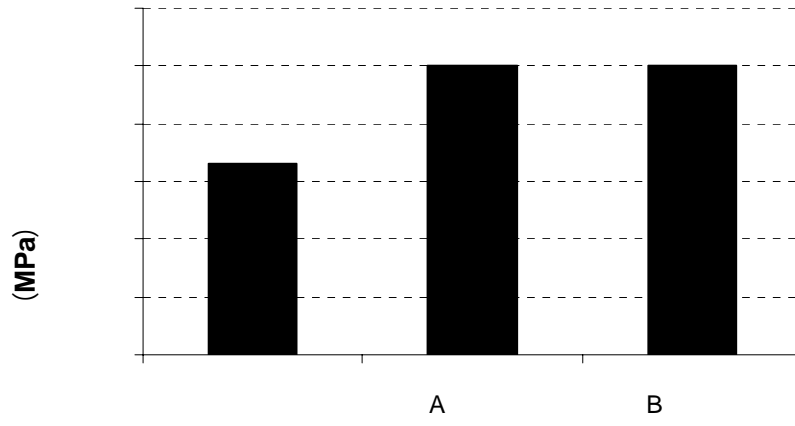
/ **

/ *

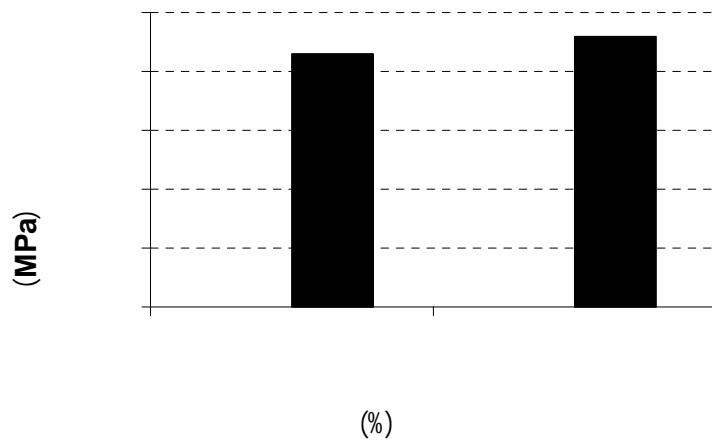
(MOE)

()

()



[]



()

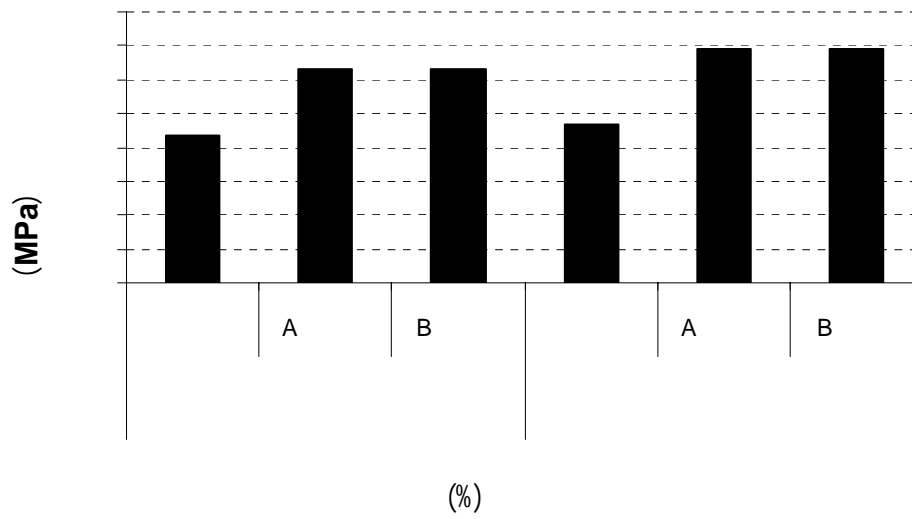
[]

(MOR)

F				
/ **	/	/		(A)
/ **	/	/		(B)
/ **	/	/		A×B
	/	/		

()

()

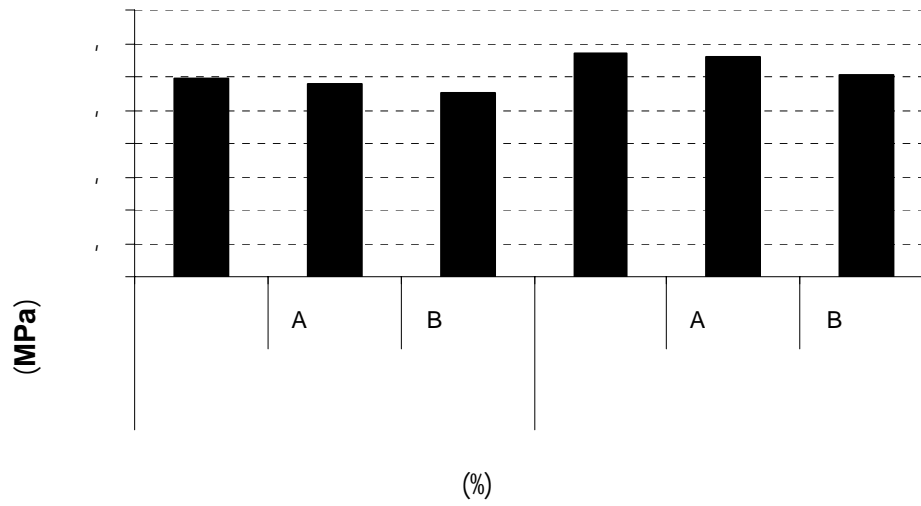


[]

() []

F				
/ *	/	/		(A)
/ **	/	/		(B)
/	/	/		A×B
	/	/		

()
(B)



[]

[]

()

()

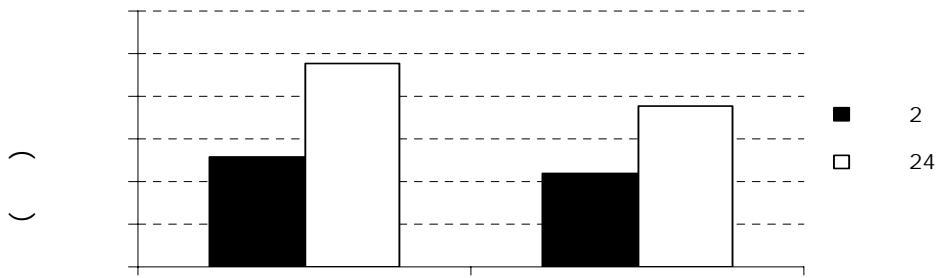
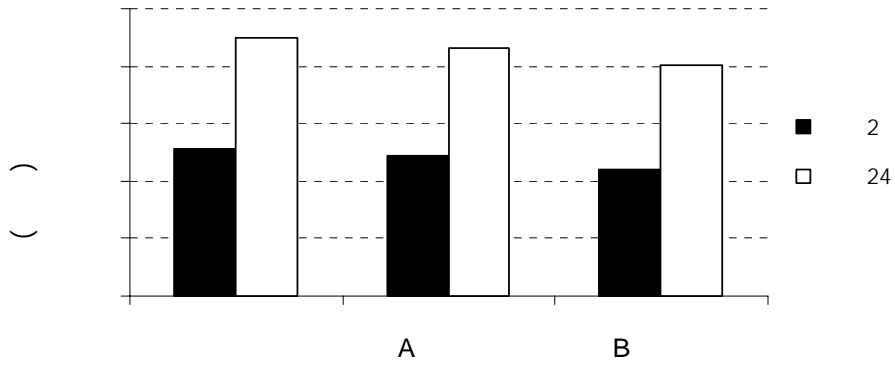
[]

F				
/ **	/	/		(A)
**	/	/		(B)
/	/	/		A×B
	/	/		

F				
/ **	/	/		(A)
/ **	/	/		(B)
/ **	/	/		A×B
	/	/		

%

...



()

Arc

()

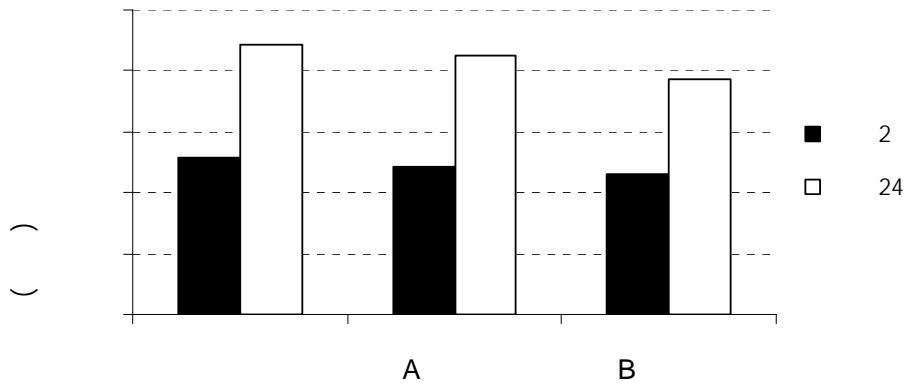
F				
/ *	/	/		(A)
/ **	/	/		(B)
/	/	/		A×B
	/	/		

F				
/ **	/	/		(A)
/ **	/	/		(B)
/	/	/		A×B
	/	/		

()

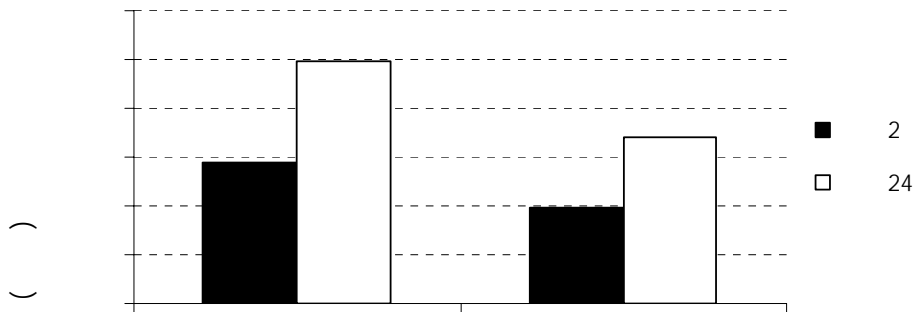
SID

B



()

↓



()

CSA

(

PF

APA

) 0437.0

)

(

()

A

()

B

()

)

(

CSA

[] APA

O437.0

()

3. Forest products laboratory, 1999. Wood handbook- Wood as an Engineering material, Gen. Tech. Rip. FPL- GTR-113. Madison. WI: U.S. Department of Agriculture, Forest service, Forest products laboratory., 463 pp.

4. Geimer, R.L., 1981. Predicting shear and Internal Bond properties of Flakeboard, Holz als Roh-und Werkstoff, 39 (1981): 409-415.

5. McNatt, J.D., L. Bach & , R.W. Wellwood, 1992. Contribution of flake alignment to performance of strandboard, Forest Products Journal, 42 (3): 45-50.

6. Sharma, V & A. Sharon, 1993. Optimal orientation of flakes in Oriented strand Board (OSB), Journal of Experimental Mechanics, 33(2): 91-98.

7. Zhou, D., 1986. A study of Oriented structural board made from Hybrid poplar, Holz als Roh-und werkstoff, 48 (1990): 293-296.

Archive of SID

Study on the effect of Strand Orientation and Resin Content on The Properties of Strand board From *Populus nigra*

O. Hoseinaei¹, M. Faezipour² and K. Doosthoseini³

¹ Ph.D Student, Faculty of Natural Resources, University of Tehran, I. R. Iran

² Professor, Faculty of Natural Resources, University of Tehran, I. R. Iran

³ Professor, Faculty of Natural Resources, University of Tehran, I. R. Iran

(Received: 13 June 2004, Accepted: 10 April 2005)

Abstract

In order to evaluate the effect of strand alignment and resin content on the properties of strand board this study was conducted. Boards were made from poplar with three types of orientation (random, face strands aligned and core strands random, face strands aligned and core strands cross aligned), and phenol-formaldehyde resin at two levels (5% and 7%). Board's thickness of 10 mm, press time of 3 minutes, and press temperature of 200°C were selected. Mechanical as well as physical properties were evaluated, according to ASTM D1037. Results showed that face strand alignment has a significant effect on boards bending properties that would result in great increase in modulus of elasticity as well as modulus of rupture (51% and 46% respectively). Core strand alignment has no effect on bending properties but leads to a significant decrease in interlaminar shear strength. In boards with three aligned layers, water absorption and thickness swelling were significantly less than those in other boards. The increase in resin content has significant effect on all the other properties and causes their enhancement.

Keywords: Oriented strand board (OSB), Phenol- formaldehyde resin, Alignment, Random, Face, Core, and Modulus of elasticity.