

*

(// : // :)

%

/ / /
 / / % / % /

IS

g/m

JIS IS

JIS

:

...

() Dads well .

New man .()

()

Zobel .()

()

Acer velutinum %
()
Aceraceae

(TMP)
() (CTMP)

()

()

()

% %
%
/
%
/

()

= _____ *

:	:
:	/
	/
	%

TAPPI T om

TAPPI T Om

T om
T om

TAPPI T om
PFI
T cm
T Om CSF
Om
T Om

...

() (A,B,C,D) T om
 T cm
 TAPPI T om
 () .()

	(%)		
		()	(°C)
/	/	A	
/	/	B	
/	/	C	
/	/	D	

/ . ()

()	
/	()
/	()
/	()
/	()

F				
/ n.s	/	/		(R)
/ **	/	/		(A)
/ **	/	/		(B)
/ *	/	/		(AB)
	/	/		

C.V=% / % *% ** .n.s

F				
/ n.s	/	/		(R)
/ **	/	/		(A)
/ **	/	/		(B)
/ n.s	/	/		(AB)
	/	/		
		/		

C.V=% / % * % ** .n.s

() A,C

/ % / A
 / % / C
 CSF= PFI

) JIS IS

(

Indian standard

Japanese International standard

...

(cm³/S.cm²)	(KN/m)	(KN/m)	(Kpa.m²/g)		(m)	(mN.m²/g)	
/	/	/	/	/		/	A
/	/	/	/	/		/	C

(m)				
	(Kpa.m²/g)	(mN.m²/g)		
	/	/	-	A
	/	/	-	C
		/	JIS	
	/	/	IS	

IS JIS

() IS JIS

/

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- 4- Dads well, R. 1985. The variation of juvenile and mature woods. JIS, P 111-117.
 - 5- Indian standard. 1991. Kraft paper-specification, ISP 2805.
 - 6- Japanese International standard. 1992. Kraft papers, JIS P 3401.
 - 7- Newman, A and Deborah, C. 1972. Biometric differences of softwoods. *Holzforschung*, 28(2) p 18-24.
 - 8- Tappi test method. 1992-93. Tappi press.
 - 9- Zobel, B.J. and Van Buijtenen. 1989. *Wood Variation , its causes and control*. Marcel Decker Inc.

Evaluation of Paper Properties Obtained From Maple Juvenile Wood Through Kraft Pulping Process

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Abstract

To investigate the strength properties of handsheets made of kraft pulping process, the biometrical characteristics of maple fibers including length, width, and cell membrane thickness were measured. Average fiber length, width, and cell membrane thickness of maple in Shastcola area, Gorgan, were determined as 871.88, 22.35, and 1.99 μm , respectively. The age of Maple juvenile wood was estimated 13.5 years. After the determination and separation of juvenile wood, different pulp types were produced through kraft pulping process. Kraft cooks were treated under different conditions including time in two 120 and 180 minute levels and temperature in two 160 and 170 $^{\circ}\text{C}$ levels with liquor to wood ratio of 5 to 1 in 3 repetitions. Pulp yields were between 45.47 and 41.26 percent. Kappa number in kraft pulps was minimum in the temperature of 170 $^{\circ}\text{C}$ and cooking time of 180 minutes. Handsheets were made from pulp produced at base weight of 60 gr/m^2 . The strength properties of handsheets were assessed. and compared with the minimum strength of "IS" and "JIS". The results indicate that all strength properties of kraft handsheets were higher than the minimum strength of "IS" and "JIS". Hence, applying maple juvenile wood in pulp and paper industry using kraft process is recommended.

Keywords: Maple Juvenile wood, Kraft, Fiber length, Strength properties, Kappa number