

Improving Strength Properties of Unbleached Bamboo Kraft Pulp by Stone Grinding

JANGALGI, N. R.*, BHARGAVA, G. G.*, DUBEY, R. K.*

SUMMARY

The article gives the comparative results of beating of unbleached bamboo pulp with an indigenously developed smooth surfaced sandstone roll and in a standard valley beater. The results show that there is an overall improvement in strength and rattle of paper when pulp is beaten by sandstone roll.

INTRODUCTION

In Indian Mills, bamboo kraft pulp is refined generally by continuous refiners and in some of the mills by Hollander beaters. Continuous refining in Conical refiners does not give the amount of hydration which is achieved either in Hollander beater or in Lavastone refiners. Since the lavastone refiners are costly imported equipment, it was decided to find out the possibility of using indigenous rock stone in place of lavastone refiner to improve the hydration and thereby the strength properties of conventional bamboo kraft pulp. With this aim this work was taken up on laboratory scale using small quantity of pulp at a time and sand pieces of fine grain and tenacity from a particular place in India.

EXPERIMENTAL

Small sample of unbleached bamboo pulp of average K. No. 19 was taken and ground on a smooth surfaced sandstone to a freeness of around 40°SR. Side by side another sample of the same pulp was refined in the laboratory standard valley beater to nearly the same freeness. Observations and the strength properties of both the samples are given in Table-I.

CONCLUSION

The stone refined pulp has given definite improvement in all the strength properties like, Tear, Burst, Folding Endurance and Tensile Strength. Rattle of the paper also improved as well as the formation.

*Orient Paper Mills Ltd., Amlai.

TABLE—I

Sl. No.	Properties	Unbleached bamboo pulp beaten to 40°SR in Lab. beater	Unbld. Bamboo pulp stone ground to 38°SR
1.	Consistency during refining	1.7%	8%
2.	GSM	65	64
3.	Caliper (mm)	0.115	0.105
4.	Bursting strength (kg/cm ²)	1.4	2.0
5.	Burst factor	21.5	31.2
6.	Tearing strength (gms. cm)	40	58
7.	Tear Factor	61.5	90.5
8.	Tensile strength (kgs, 10mm)	3.7	4.65
9.	Breaking length (M)	3795	4844
10.	% Stretch	1.7	3.6
11.	Double fold	17	46

ACKNOWLEDGEMENT

The authors are thankful to Sri K. N. Tenany, Senior Executive Vice President & Shri N.N. Agrawal, Director of Research, Orient Paper Mills, Amlai for permitting this paper for publishing. They are also very much thankful to the Management of Sirpur Paper Mills Ltd, Sirpur-Kaghaznagar and their R & D unit for conducting the trials in their indigenous rock refining equipment.