REPORT ON THE BLEACHING STUDIES OF SEMICHEMICAL PULP FROM A MIXTURE OF 8(EIGHT) MINOR HARDWOOD SPECIES.

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INTRODUCTION.

Bleaching studies were conducted on the semichemical pulp prepared from the mixture of 8(eight) minor hardwood species namely Itchri (Anogeissus acuminata), Amra (Spondias Pinnata), Barta(Artocarpus lakoocha), Champhata (Sapium baccatum), Gutgutia (~~Walsura robusta~~ Bursura serrata), Chakua koroi(Albizzia chinnensis), Kuramara (Pithecolobium angulatum) and Jagga Dumur (Ficus glomerata) which are scattered all over the Chittagong and Chittagong Hill Tract areas. The pulp prepared under optimum condition was bleached by 3-stage, 5 stage and 7 stage processes with chlorine water, Sodium hydroxide and Sodium hypochlorite. The colour of the pulp was not appreciably changed after 3 stage bleaching and the brightness values were increased with increase in bleaching stages. A good quality writing paper was made from the bleached neutral sulfite semichemical pulp on the laboratory Fourdrinier paper machine. The properties of the paper compared favourably with commercial paper of the type.

RESULTS AND DISCUSSIONS.

Neutral sulfite semichemical pulp was prepared from a mixture of 8 minor hardwood species for bleaching studies. A permanganate number of the pulp was determined as per TAPPI standards (T.214m-50) and the value was found to be 42.0. The bleaching requirements of the pulp were calculated from the permanganate number. 80 per cent of the total requirement was

applied in the 1st stage of bleaching with Chlorine available in Chlorine water. In the second stage caustic extraction was made for one hour at room temp. Sodium hypochlorite was applied in the third stage and was kept for 3 hours at 37°C. The results of 3 and 7 stages of bleaching sequences have been shown in Table 1.

TABLE-1.

BLEACHING STUDIES OF NSSC PULP PREPARED FROM A MIXTURE OF 8 (EIGHT) MINOR HARDWOOD SPECIES.

Bleach No.	No. of stages	Chemical used	(%) Chemical. Applied	Consumed.	Freeness (CSF) ml	Brightness (%)
1	3	a) $Cl_2 \div H_2O$	a) 80%	a) 96.7	-	-
		b) NaOH	b) 30%			
		c) Na(OCl) + NaOH	c) 20% 6%	c) 73.7	430	71.0
2	7	a) Cl_2-H_2O	a) 80%	a) 96.7		
		b) NaOH	b) 30%			
		c) Na(OCl) + NaOH	c) 10% 4%	c) 89.5		
		d) NaOH	d) 2%			
		e) Na(OCl) + NaOH	e) 5% 2%	e) 52.7		
		f) NaOH	f) 2%			
		g) Na(OCl) + NaOH	g) 5% 2%	g) 38.9	490	74.0

N.B. 1. Initial Freeness of unbleached pulp was 430 ml.

2. Bleaching studies were conducted with 100 gm. O.D. sample in each stage of bleaching.

3. $KMnO_4$ number of the unbleached pulp was 42.0

It will be observed from the table that the brightness value after 3-stage bleaching was 71.0%. The pulp was further bleached upto 7-stage. The results of 5-stage bleaching are shown in Table-2.

TABLE-2.

BLEACHING CONDITION OF THE NSSC PULP PREPARED FROM 8(EIGHT) MINOR HARDWOOD SPECIES BY 5 SPECIES.

Stages.	Processes	Chemical used (%)	Chemical consumed (%)	Consistency (%)	Time (hr)	Temp. (0°C)	P H		Brightness (%)
							Initial	Final	
1	Chlorination (Cl_2-H_2O)	80	96.7	2%	1	22	2.00	1.5	-
2	Extraction (NaOH)	30	-	10%	1	70	10.0	10.0	-
3	Na(OCl) + NaOH	10 + 4	73.7	10%	2	37	10.0	10.0	-
4	Extraction (NaOH)	2	-	10%	1	70	10.0	10.0	-
5	Na(OCl) + NaOH	10 + 2	89.5	10%	3	37	10.0	10.0	73.5

It will be observed from these tables that the brightness was moderate (73.5%) after 5-stages and was maximum after 7-stages (74.0%). It was not considered reasonable to continue two stages

of bleaching after the 5th stage for an increase of 0.5% brightness, which is rather insignificant.

Paper machine furnish was prepared with the bleached pulp obtained after 5-stages of bleaching for making writing paper. The specimen of the paper made in the Laboratory Fourdrinier paper machine was found to posses satisfactory properties and was comparable with the properties of commercial writing papers.

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