

Pulping and Environment Friendly Bleaching of Whole Jute

U.K.Ghosh^{*}, Vishal Anand and Pulkit Pokhara

Department of Paper Technology,
Indian Institute of Technology Roorkee, Saharanpur Campus,
Saharanpur "C 247001, INDIA

* ghoshuk_iitr@yahoo.com

ABSTRACT

Whole jute, also known as *Corchorus Capsularies*, is grown in many parts of the world particularly in eastern and central India and Bangladesh. Although it is a non-wood material but its fibers are long, which results in considerably high tear and tensile strength of paper made out of it. The pulp after bleaching is stronger, brighter and more resistant to yellowing. In this study optimum process conditions for whole jute pulping and ECF bleaching have been investigated.

Thoroughly washed and air dried whole jute plant was cut into small pieces and subjected to soda / soda-Aq pulping process. The process which resulted in lower Kappa no. was selected. After this, amount of Soda dose was optimized. Again the soda dose which gave good yield along with low Kappa no. was chosen. After optimizing the soda dose, the pulp was subjected to oxygen delignification. The oxygen delignified pulp was bleached by various ECF sequences namely ODED, ODEP, ODEPD. CEHH and DEPD bleaching sequences were also performed prior to oxygen delignification for comparison. The combined effluent after each stage of bleaching was collected. BOD₅ and COD for each sequence were calculated. Hand sheets were prepared in British sheet former under standard pressing and drying conditions and optical and physical strength properties of all the bleached pulps were evaluated and a comparison has been made.

Among the sequences studied, the ODED, ODEP, ODEPD were found to give brightness above 86% ISO. The CEHH and DEPD sequences almost reached 80% brightness at the cost of reduction in strength properties and higher pollution load. The ODEPD bleaching sequence (Brightness 88.4% ISO), which improves strength properties substantially and generates much less pollution load both in terms of COD and TOCl, is quite promising for whole jute pulp for the production of writing and printing grade paper.