Alkaline sulfite anthraquinone and methanol pulping of bamboo (Gigantochloa scortechinii)

ABSTRACT

Alkali ratios and cooking time of the alkaline sulfite anthraquinone(AQ)and methanol (ASAM) pulping process of bamboo (Gigantochloa scortechinii)were studied. Bamboo chips were cooked at three different levels of sodium hydroxide and cooking time, namely14, 16, or18% for 60, 90, or 120 minutes. Pulping parameters that remained constant were the use of 0.5% ethylene diamine tetraacetic acid (EDTA), with an 80/20 ratioNa2SO3/NaOH, 0.1% anthraquinone, 15% methanol, and a temperature of 170 °C in the cooking process. Samples prepared using 14% NaOH and 90 min of cooking time resulted in the highest pulp yield, 52.4%, and a Kappa number of 18.1. It seems that 16% sodium hydroxide and 90 min of cooking time are the most appropriate cooking conditions, giving a 49.1% pulp yield and 14.2Kappa number. The quality of bamboo pulp produced by the ASAM pulping process was found to be beneficial for the use in paper and board manufacturing.

Keyword: Gigantochloa scortechinii bamboo; Fiber dimensions; Chemical composition; ASAM pulping; Pulp properties