

Alkaline Sulfite Anthraquinone and Methanol (ASAM) pulping process of tropical bamboo (*Gigantochloa scortechinii*)

ABSTRACT

This chapter explores the characteristic potentials of alkaline sulfite anthraquinone and methanol (ASAM) pulping of bamboo culms (*Gigantochloa scortechinii*) in the industrial production of pulp and paper for packaging. The biometric characterization results of the bamboo culms show that bamboo has fiber length of 1980–4000 μm , Runkel ratio of 0.86, and flexibility ratio of 50.19, while the chemical compositions of the bamboo contain 47.67% cellulose, 68.33% holocellulose, 26% lignin, and 3.69% solvent extractive, which give good paper quality fiber and also falls within the range of wood from softwoods species. The study revealed that the optimum ASAM pulping parameters was at 16% NaOH and 90 min cooking time, resulting in Kappa number of 14.17 and pulp yield of 49.06%, while the paper tensile index of 20.86 Nm/g, tear index of 22.64 mN.m²/g, and brightness of 39.32% were obtained. The biometric and chemical characterizations of the ASAM pulped bamboo have shown that ASAM pulped bamboo produces high-quality pulp and paper suitable for packaging and printing paper. Hence, the use of bamboo materials can reduce the burden on the forest, due to the increasing demand for paper and paper products, while supporting the natural biodiversity.

Keyword: Alkaline sulfite anthraquinone and methanol; ASAM; Pulping; Bamboo; Pulp and paper