

## **ABSTRACT**

### **STUDY USING OF HYDROCHLORIDE ACID AND PEROXYACETID ACID ON ACETOSOLV PULP PRODUCTION PROCESS FROM SUGARCANE BAGASSE AND BAMBOO BETUNG**

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The waste of agroindustry that can be used as raw materials for pulp making industry are sugarcane bagasse and bamboo. The technology used in the pulp production process is acetosolv. This research used hydrochloride acid (HCl) as a catalyst in the process of cooking and peroxyacetid acid in the process of bleaching. The purposes of the study were to determine the influence of HCl concentration and duration of cooking on the chemical properties of the resulted pulp and peroxyacetid acid to evaluate the effect of chemical and physical properties of pulp produced.

The factors investigated in this phase were the concentrations of HCl which consisted of 5 levels: (H1) 0.125%, (H2) 0.25%, (H3) 0.5%, (H4) 1%, and (H5) 2% and the cooking duration that consisted of 2 levels: (L1) 2 hours and (L2) 4 hours. The best results from the phase of pulp cooking, was used for further research which has the effect of peroxyacetid acid on the pulp bleaching process. The research in this phase was prepared by a single treatment in a structured Complete Randomised Group Design. The concentrations of

peroxyacetic acid were 0% (v/v), 5% (v/v), 10% (v/v), 15% (v/v) and 20% (v/v). The overall research was carried out in three replications and then the data were analyzed by using Bartlett Test. Tuckey Test was used for their homogeneity and additivity. Then they were analyzed further using LSD to look for differences between the cooking process, the data on the bleaching process were analyzed using Duncan Test each at levels 1% and 5% (Steel and Torrie, 1995).

The results showed the best results was obtained from the cooking process using HCl concentration of 0.25% and cooking time of 2 hours. The pulp yield was 57.52% and contained 68.12%, 11.83%, 13.53% of cellulose, hemicellulose, and lignin respectively. The best results was obtained from the bleaching process through using peroxyacetic acid 15%, has the characteristic of cellulose content of 79.69%, hemicellulose content 11.47%, lignin content 5.18%, degree of white pulp (whiteness) 87.40%, tear index 3,97 mN m<sup>2</sup>/g, tensile index 27.53 Nm/g and resulted in yield of 74.03%.

Keywords: cellulose, acetosolv pulping, hydrochloride acid, peroxyacetic acid.