

TEXTILE FIBER PRODUCED FROM SUGARCANE BAGASSE CELLULOSE: AN AGRO-INDUSTRIAL RESIDUE

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ABSTRACT

Sugarcane bagasse with and without acid hydrolysis was used for extraction of cellulose. The bagasse pulps without or with hydrolysis, and commercial mixtures of these materials in different proportions were used for the production of textile fibers. All sugarcane bagasse pulps were obtained by the alkaline pulping soda-antraquinone (AQ) and subjected to chemical bleaching to remove residual lignin using hydrogen peroxide or sodium chloride. Pulps were used to obtain fibers with N-methylmorpholine-N-oxide (NMMO). Bagasse and pulps were characterized by their chemical composition. Fibers were analyzed to evaluate maximum water uptake loading or swelling, weight loss and mechanical properties. Microstructure was analyzed by scanning electron microscope (SEM). The pulping yield was 34.6% for bagasse without hydrolysis and 26.6% for bagasse with hydrolysis. The fibers showed water uptake capacity in the range of 60 – 86%. Fibers obtained from commercial cellulose and bagasse without hydrolysis and whitened with hydrogen peroxide had tenacity values of 4.3 cN/tex, which are compatible with commercial lyocell made from wood pulp cellulose.

KEYWORDS: Sugarcane Bagasse, Cellulose, Lyocell, Textile Fibers