

Bleaching of kraft pulps produced from green liquor pre-hydrolyzed South African Eucalyptus grandis wood chips

Jerome E. Andrew, Jonas Johakimu and Bruce, B. Sitholé

Abstract

The effect of hemicellulose pre-extraction of South African Eucalyptus grandis wood chips using green liquor, on subsequent kraft pulping and bleaching processes was studied. This was done in the context of a biorefinery mill producing both ethanol and bleached Eucalyptus kraft pulp. The pre-extraction (hydrolysis) of hemicelluloses prior to kraft pulping reduced the demand of pulping chemicals by as much as 20% and still resulted in pulps with similar kappa numbers and yields as pulps produced from unhydrolyzed wood chips (control pulps). In addition, the hexenuronic acid (HexA) content of the brownstock prehydrolyzed kraft (PHK) pulps were about 30% lower compared to the control pulps. This led to improvements in the subsequent pulp bleach-ability. Savings in chlorine dioxide for PHK pulps ranged between 2-18% for sequences that used chlorine dioxide as the primary oxidative bleaching chemical. When ozone was used in combination with chlorine dioxide, mixed results were obtained – PHK pulps showed better bleach-abilities when ozone followed immediately after oxygen delignification, i.e. OZDED or OZD (EP) D, but not when ozonation followed the acid hydrolysis (A) stage.