

# **The Effect of Hydrogen Peroxide Bleaching on the Properties of Unbleached Hardwood Kraft Pulp Adsorbed with Birchwood Xylan**

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## **Abstract**

Xylans are polysaccharides present in large amounts in cell walls of land plants. However, during kraft cooking, a high portion of hemicelluloses including xylans are dissolved in the cooking liquor. In the current trend for a more effective utilization of biomass, attention has been paid to the exploitation of xylans as strength-enhancing additives for paper. It is believed that surface xylan adds flexibility to the cell wall/fiber surface, resulting in stronger fiber-fiber joints or greater contact area between the fibers. Accordingly, there is proposal for a new pulping process involving the extraction of xylan prior to pulping, followed by their re-adsorption on the unbleached pulp. A suitable bleaching process should be employed then, which ought to does not only improve the brightness of the pulp, but also remain the effect of the adsorption of xylan on pulp fibers. The objective of this research was to investigate the impact of hydrogen peroxide bleaching on the properties of unbleached hardwood kraft pulp pretreated with birchwood xylan by measuring optical properties (brightness, post color number, opacity) as well as physical properties (tensile index, tearing index, bulk) of handsheets made from the bleached pulp. In the meantime, the influence of process variables of peroxide bleaching including bleaching temperature, time, initial pH and  $MgSO_4$  dosage were studied.