

Oxygen delignification: An effective back-end modification to reduce pollution load and improve mechanical strength properties prior to bleaching

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ABSTRACT

Most of the Indian pulp and paper industry bleaches the pulp by conventional bleaching sequence (CEHH). The final discharge of the mill contributes to high COD load and AOX which is highly toxic in nature. The introduction of molecular O₂ before bleaching and reinforcement of alkali extraction stage with O₂ and H₂O₂ (E_{OP}) in OC(Eop)HH bleaching sequence reduces the COD load by 40.58%, suspended solids by 24.74%, dissolved solids by 36.53%, total solids by 35.94%, AOX by 42.86% and chlorides by 34.69% than that of C(Ep)HH bleaching sequence with improvement in mechanical strength properties. The operating cost of OC(Eop)HH bleaching sequence is only Rs. 1275.00 per tonne of pulp more including the cost of bleaching chemicals compared to CEpHH bleaching sequence.

Key words: O₂ delignification, Bleaching, Effluent characteristics, Kraft pulping, Paper