

Hot Chlorine Dioxide versus Conventional D₀ Stage in ECF Bleaching of Kraft Pulps

Sanjay Kumar, Shree P. Mishra, Om P. Mishra, Pratima Bajpai, Sandeep Tripathi and Pramod K. Bajpai

Raghavan Varadhan

ECF bleaching of mixtures of hardwood and bamboo pulps from paper mills was carried out in different bleaching sequences to full brightness. Kappa factor was optimized in each case to get the desired optical properties with judicious use of bleaching chemicals. Comparison between conventional ECF bleaching and the hot chlorine dioxide bleaching was done and the effects of hot D stage on the various pulp properties, chemical consumption and AOX generation were studied.

Bleachability of 80% hardwood and 20% bamboo pulp was found to be better as compared to 40% hardwood and 60% bamboo pulp in ECF sequence and it required the lowest kappa factor (0.22) to bleach to 90+ brightness levels. Kappa factor requirement for ECF bleaching of 40% hardwood and 60% bamboo pulp was 0.33. The substitution of standard D₀ stage with D_{HT} stage in conventional ECF bleaching reduced HexA content and improved the brightness and other optical properties. D_{HT} stage also reduced the chlorine dioxide consumption, which resulted in reduced generation of AOX. It was possible to achieve AOX level < 1.0 kg/TP in case of 40% hardwood and 60% bamboo pulp and 0.5 kg/TP in case of 80% hardwood and 20% bamboo pulp when bleached in D_{HT}E_{OP}D₁D₂, D_{HT}E_{OP}D₁ED₂, D_{HT}E_{OP}D₁P and D_{HT}E_{OP}PD₁ sequences without using oxygen delignification.