

Typical ECF bleaching sequences conditions of softwood kraft pulp

Bleaching stages	DE ₀ DED	ODE ₀ DED	ODE ₀ D
Initial kappa number	27	14	14
Delignification			
D ₀ , ClO ₂ , kg eq.Cl/tbdp	54	28	28
D ₀ , pH	2	2.5	2.5
D ₀ , temperature	60	60	60
Extraction			
E ₀ , NaOH, kg/tbdp	33	17	20
E ₀ , pH	10.5	10.5	10.5
E ₀ , temperature	65	65	65
E, NaOH, kg/tbdp	10	8	-
E, pH	10	10	-
E, temperature	70	70	-
Bleaching			
D ₁ , ClO ₂ , kg eq.Cl/tbdp	30	25	35
D ₁ , pH	4	4	4
D ₁ , temperature	70	70	80
D ₂ , ClO ₂ , kg eq.Cl/tbdp	10	8	-
D ₂ , pH	5	5	-
D ₂ , temperature	75	75	-
Total equivalent chlorine kg/tbdp	94	61	63
Final brightness, % ISO	89	89	87

eq.Cl = equivalent chlorine; tbdp = tone bone dry pulp