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PolyCell: New oxidative process for added-value celluloses production

PolyCell : Nouveau procédé d'oxydation pour la production de celluloses à valeur ajoutée

Biochip

Context / Objectives

Conventional paper pulp production

Objectif: Synthesis of different types of pulps on the same bleaching line

- Increase the flexibility of paper pulp mills
- Develop an innovative oxidizing process to produce dissolving pulp in parallel to the production of the conventional bleached Kraft pulp

Bleaching/ Purification
Paper pulp ⟷ Dissolving pulp

Advantages of dissolving pulps

- Replace fossil-based sources by natural sources
- Bioproducts of high added value
- Large field of applications: textile, pharmaceuticals …

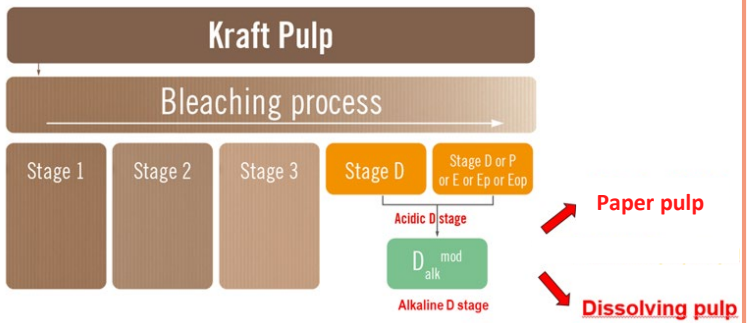
In collaboration and funded by CTP: ctp centre technique du papier

Methods

Step 1: Optimized D_{alk}^{mod} bleaching process

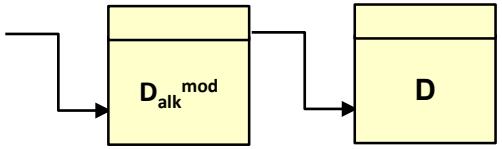
Patented process

- Modified alkaline bleaching
- Chlorine dioxide under revisited operating conditions to purify the pulp during bleaching
- 5min / 50°C – variation of chemical dosages



Step 2: Final bleaching step: D stage

Conventional chlorine dioxide bleaching



Results

Step 1: D_{alk}^{mod} bleaching process

- Decrease environmental impact (low AOX)
- Reduce production costs
- High pulp brightness (≈ 90%)
- Low hemicelluloses values (≈ 6%)
- Very low lignin and Kappa number (< 1)
- Possibility to recover the removed hemicelluloses from effluents

Step 2: Residual hemicelluloses removal process

Hemicelluloses content reduced to 4,5%