Optimization of the Clupak process in extensible kraft paper production

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Agenda

- Challenges for modern extensible kraft papers
- Clupak process and its simulation in the laboratory
- Selective results and conclusions
- Outlook
Extensible kraft paper undergoes various stresses during its lifetime

Filling

Dropping
Stress-strain curve for kraft paper in machine direction
Stress-strain curve for extensible kraft paper in machine direction
Clupak process and its simulation in the laboratory

**Forming (Rapid-Köthen)**
- Air suction time: 1 min

**Consolidation (Rapid-Köthen)**
- Temperature: 42°C
- Suction: 92 kPa
- Time: 12 min

**Pre-drying (Drum dryer)**
- Temperature: 59°C
- Time: 2 min or 3 min

**MD compaction (Lab apparatus)**
- ZD pressure: 63 kPa
- Rubber recoiling: 7% or 14%
- Time: 15 min

**Final drying (Rapid-Köthen)**
- Temperature: 98°C
- Suction: 92 kPa
- Time: 15 min
Specific stress vs. Strain curves for the laboratory simulations

Rubber recoiling of 7%

Rubber recoiling of 14%
Outcome

- We have developed a clear understanding of the Clupak process
- The new knowledge is used to improve the performance of the extensible kraft papers to the new level

Stronger paper with decreased consumption of raw materials and energy during the production
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