Surface treatments for solid board packaging

Marc Marsidi – EFPRO ESR EPW – 26 November 2013
1. Introduction solid board as packaging material

2. Improvement of solid board
   a) In raw materials
   b) In process
   c) In product by surface treatment
Ah... the Dutch...
Typically Dutch - Solid board
Production process

Speed Former

or

Foudrinier machine
Production and finishing

Wire section
Press section
Drying section
Size press
2nd dryer
Laminator
Finishing

Wire section
Pressing
Drying
Laminator
Drying
Applications solid board
Essential characteristics

- Fire
- Moisture
- Heat
- Cold
- Sound absorption
- Wear

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Raw materials

• Using alternative fibres
• Using less fibres
Process: Foam forming

• Using foam to apply starch with high consistency during paper forming process.
• Allows to save up to 50% of materials whilst maintaining same mechanical properties.
• More even sheet formation allows production of low grammage paper.
Process: Blow-up board

Figure:
Blow-up board of 200 g/m². Left-hand side sonication amplitude 60 µm; right-hand side sonication amplitude 88 µm.

- Lightweight board
- Higher active area
Product: Alternative coating system

- Current: liner lamination
- Innovation: application of barrier properties via spray coating
- Advantages:
  - Lower amount
  - Easier to apply
  - Topography of substrate has no influence on the coating weight and application
Product: Bio coatings

• Innovation: PHA laminates and coatings produced from industry process water by closed loop approach

• Advantages:
  – Bio based, biodegradable
  – Application of alternative barrier coating in current production process in similar way
  – Reduction of waste materials
  – Cleaned water
Product: CNC to enhance surface

- Investigate use of CNC (cellulose nano crystals)
- Enhance surface for printed intelligence
- Thermochromic inks
- Printability tests (pick, optical density, mottling, gloss)
Product: CNC to enhance surface

- Surface gloss increases
- Colour density of inks not significantly affected
- Mottling (uneven print) seems to appear on the substrates coated with larger NC coat weights (~6 g/m²)
- Large coat weight results in deteriorated picking behaviour, especially for pure NC.
- The effects are strongly correlated to the structure of a substrate (porosity, surface charge, composition, etc)
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