



PRESERVE

Sustainable packaging with tailored end of life

PRESERVE

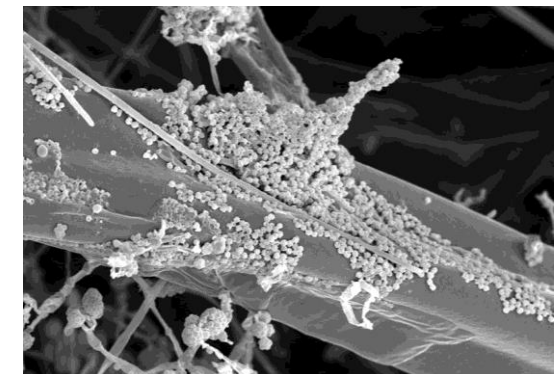
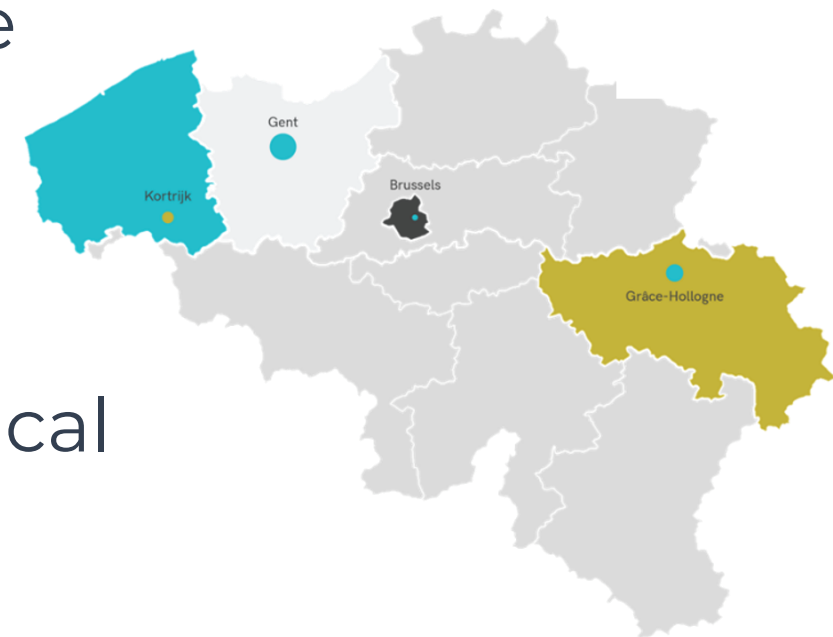


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CENTEXBEL

- Collective research and technical centre
- Focus on 'Textiles' and 'Plastics'
- 180 collaborators - 3 sites in Belgium
- Well-equipped testing laboratories:
physical – chemical – fire – microbiological
- Pilot platforms:
extrusion – textile – coating & finishing



OUTLINE

- ④ **PRESERVE and its goal**
- ④ Highlighted activities
 - ④ Bioplastic multilayers
 - ④ Upcycling
- ④ Take home messages



PRESERVE GOAL

Need for high performance biobased packing to meet EU sustainability goals

- 🌀 Enhance bio-based packaging properties and recyclability
- 🌀 Recovery and reintroduction of biopolymers
- 🌀 Upcycling of secondary raw materials in non-food



PRESERVE

Biobased & recyclable food packaging

- 🌀 Snack flowpack
- 🌀 Beverage cups, bricks
- 🌀 Etc.



Recycled personal care and transport packaging

- 🌀 Carrier box
- 🌀 Injected jar
- 🌀 Etc.



PARTNERS



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BIOPLASTIC MULTILAYERS

- ① Can we switch to biobased multilayers
- ① Can we switch to biobased (PHA) barrier coatings for cups, bricks, trays, etc.?
- ① How do we ensure recyclability?



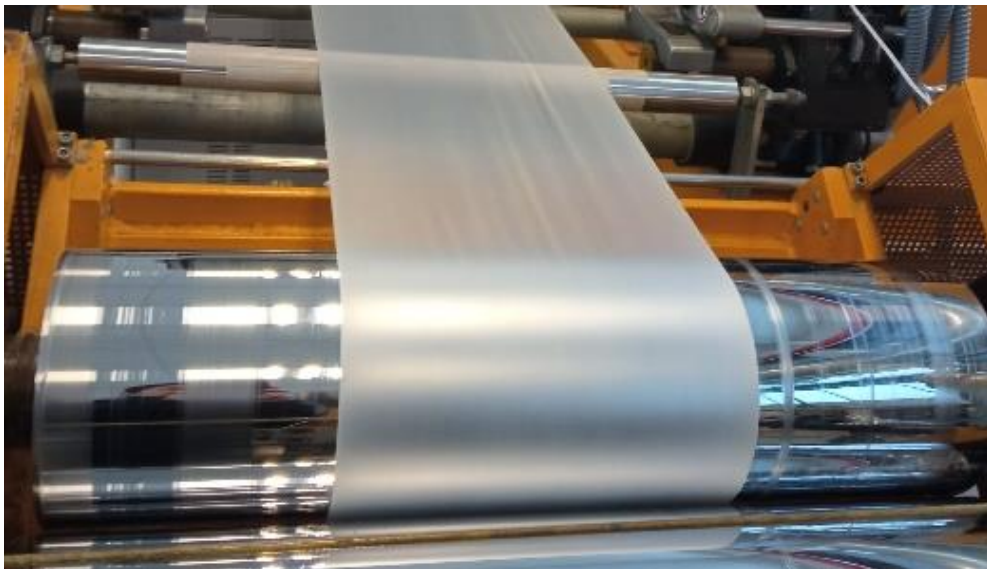
PLA OR BIOPET PACKAGING

- ④ Protein coatings
 - ④ Improved OTR
 - ④ Eases separation
- ④ Metalization of protein or PLA layer
- ④ Biobased adhesives
 - ④ Bio-PU
 - ④ Protein based hotmelt



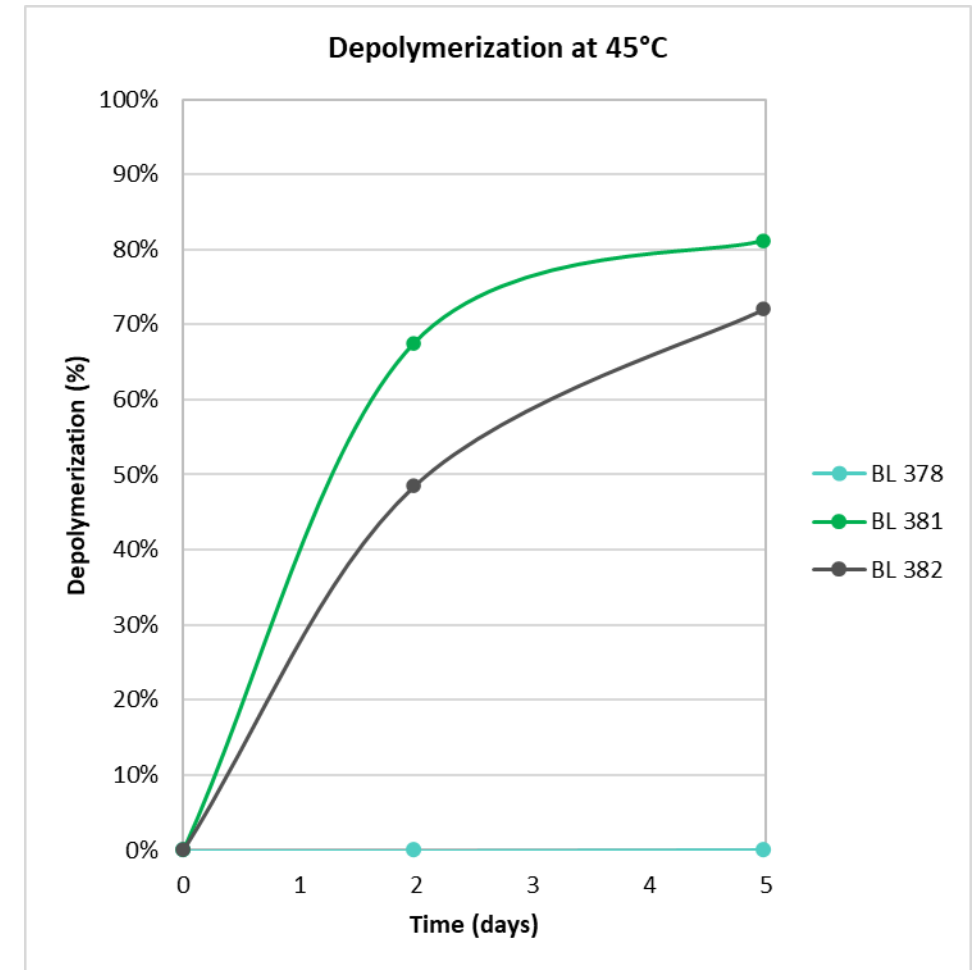
PHA COATING

- Biopolymer produced by bacteria
- Applicable on paperboard (wet or extrusion coating)
- Good WVTR: $17\text{g}/\text{m}^2\cdot\text{day}$



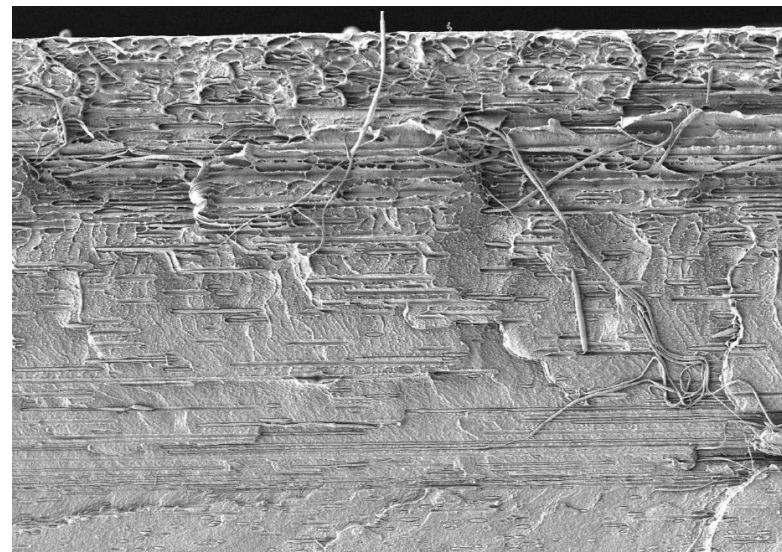
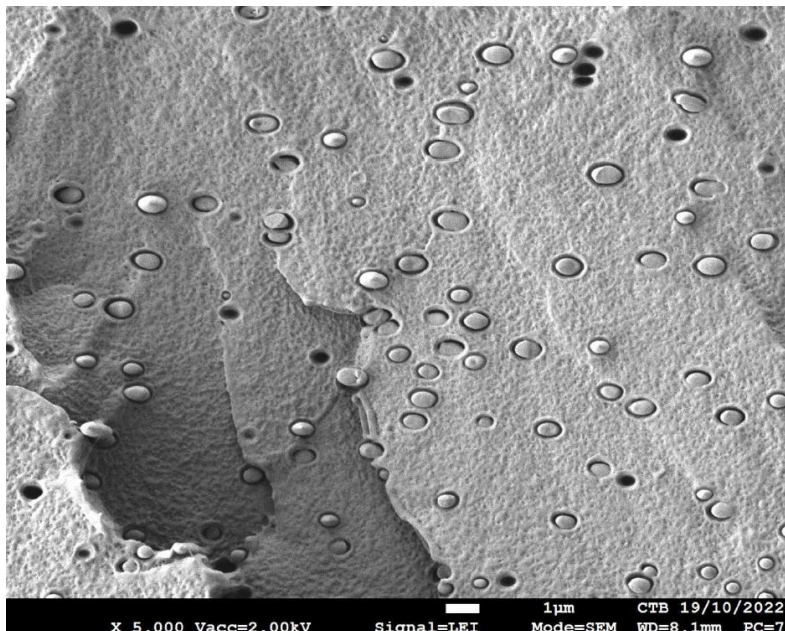
HOW TO RECYCLE?

- ① Verifying automated sorting
- ① Optimizing layer separation
- ① Repulpability
- ① Compostability
 - ① PLA with improved compostability
- ① Upcycling of materials or blends



UPCYCLING: MICROFIBRILLAR REINFORCED FILM

- LDPE fortified with PA and PLA fortified with PLA
- 10-25% increase in modulus
- 10% (MD) and 100% (TD) increase in tensile strength
- e-beam reduces OTR and WVTR bij 10-15%



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TAKE HOME MESSAGES

- ④ Viable biopolymer multilayers
- ④ PHA shows new potential as barrier coating
- ④ Blends of r-PLA or rPE-PA can be self-reinforced
- ④ Upscaling ongoing

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Thank you for your attention

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