Processing of Wood reinforced PHA (PWP)

Interreg VI A-project ‘**EMPATHI**’ – a Pilot study (TRL 3-6)
Rik Voerman, 22 October 2024
rikvoerman@triplebenefit.nl

Co-funded by
the European Union

Triple Benefit

westerkamp
MODERN MATERIAL MILLING

Triple Benefit

Circularity in composites and plastics industry

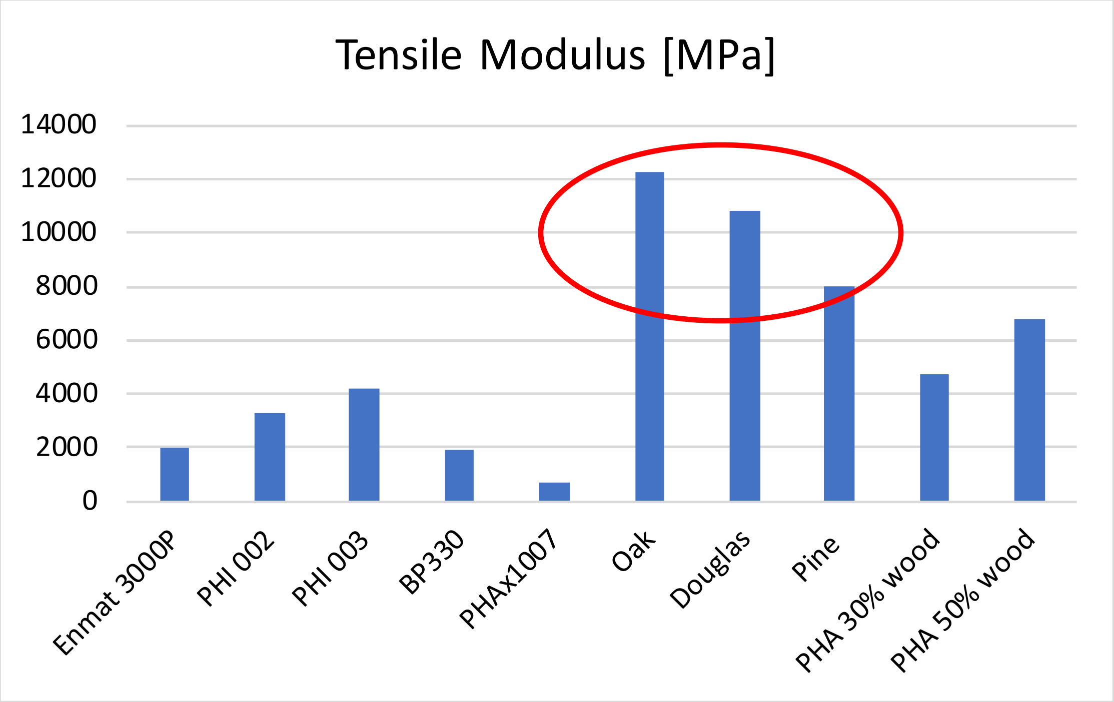
- Project management conversion processes
- Composites manufacturing
- Plastics recycling in LMIC
- Circular river fashion
- Thermoplastic composites recycling
- Bioplastics and biocomposites

The challenge

PHA resins are increasingly available, but there are challenges:

- High cost price
- Complex processability

→ Add cheap and stiff Wood AND develop cheap convertions processes



The project

Objective: Analyse processability of wood filled PHA compounds with alternative processing methods

compound

fine wood particles after milling

coarse wood particles after milling

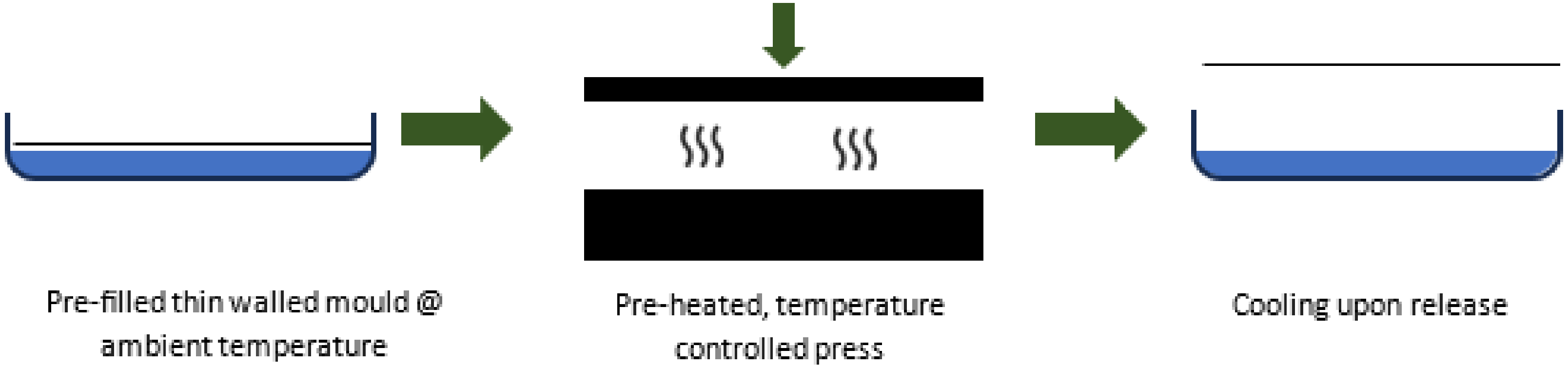
raw material from saw mills

1. Compounding

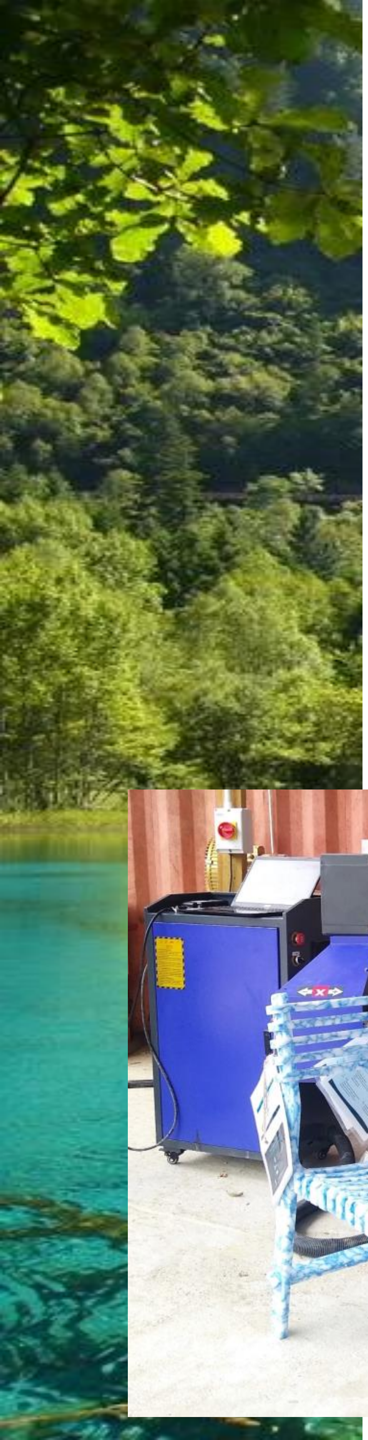
- Test two types of wood particles (fine/coarse) with one PHA grade
- Variation in filler type and quantity (min. 25 %; max. 45 %)

2. Processability by sintering

Panel sintering process

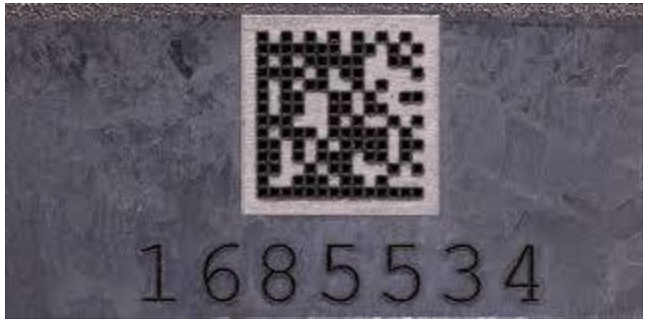


- Minimum heating time
- Controllable cooling
- Low pressure = cheap moulds = smaller series possible



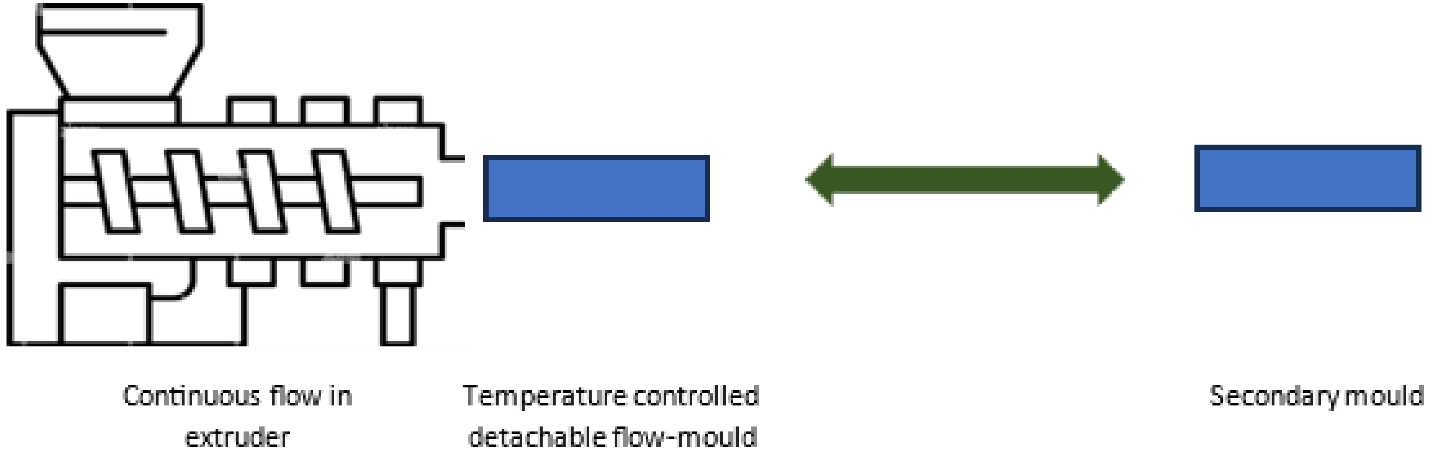
Shapes from sintered panels

- 2D flat shaped panels
- 2D laser cutting
- Laser engraving
- 3D assembly of 2D shapes



3. Processability by flowmoulding

Flow moulding process



- Controllable cooling of mould
- Low pressure = cheap moulds = smaller series possible

Shapes from flowmoulding

- Semi-extruded profiles
- 3D shapes
- Compositions thereof

3. Keep the material circular

Do not compost but reuse this precious material!

- Consider recyclability
  if reuse is not possible

Thank you for your attention

Further info:
rikvoerman@triplebenefit.nl

Co-funded by the European Union

PHA production