Influence of bio-based preservatives on OSB panels: Leachability, biodegradation resistance and mechanical properties

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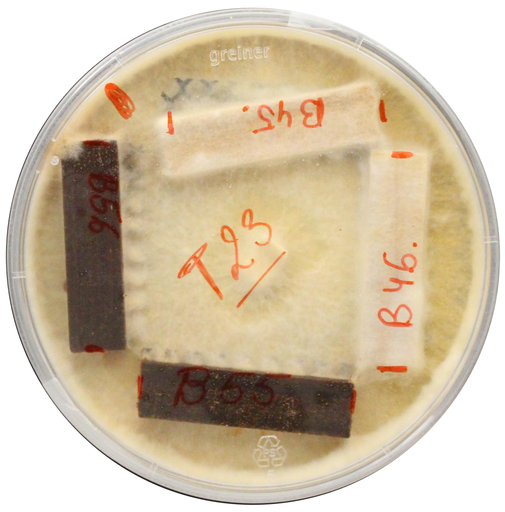
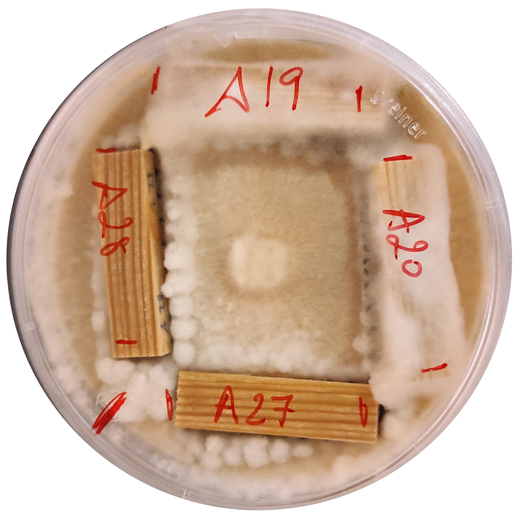
1 - Introduction

- OSB panels are **susceptible to mold and decay** leading to a loss of strength and durability.
- Current wood preservatives have several environmental issues. **Ecotoxicity and leachability**.
- Bio-based wood preservatives offer an **environmentally friendly** alternative to traditional chemical treatments for protecting OSB panels from decay fungi.
- Incorporating bio-based wood preservatives into the treatment process, not only protect OSB panels from decay fungi but also contribute to more sustainable and eco-friendly construction practices.



Biodegradation test after 16 weeks of decay exposure of tannin-treated wood and control specimens.

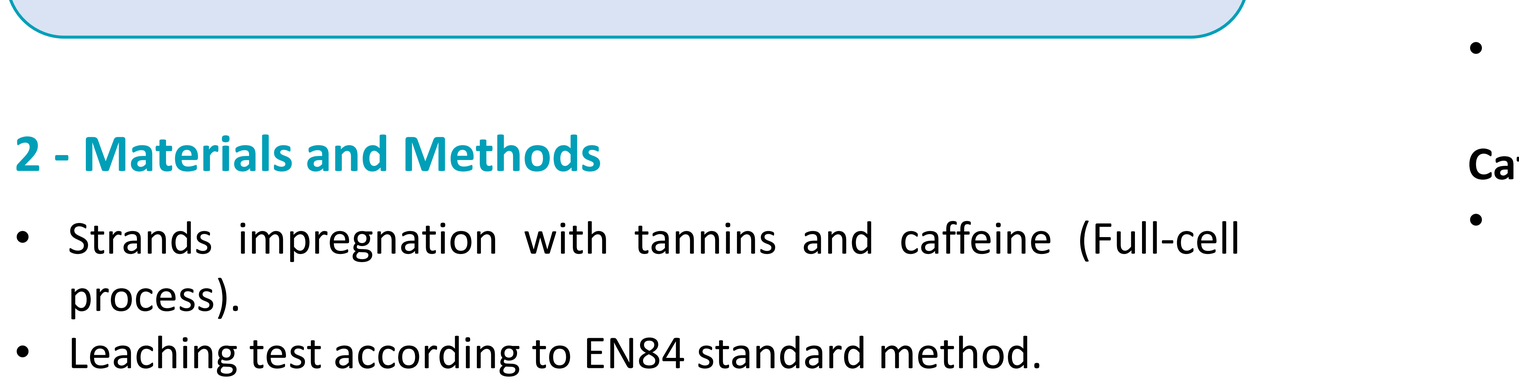


Biodegradation test after 16 weeks of decay exposure of caffeine-treated wood and control specimens.

Aim of the study:
Assessing the leachability, biodegradability and mechanical performance of OSB panels treated with bio-based preservatives.

2 - Materials and Methods

- Strands impregnation with tannins and caffeine (Full-cell process).
- Leaching test according to EN84 standard method.
- Biodegradation (ASTM D2017-05).
- Internal bonding (ASTM D1037 – 12 (2020)).
- Linear expansion (ASTM D1037 – 12 (2020)).
- Static bending (ASTM D1037 – 12 (2020)).
- Fire resistance.



3 – Expected results

Tannin-treated panels:
- Enhance the decay resistance.
- Increase the adhesion.
- Improve the mechanical properties.
- Enhance the fire resistance.

Caffeine-treated panels:
- Enhance the decay resistance.

Comparison of control (left) and caffeine-treated (right) wood after 16 weeks of exposure to decay.

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