

ABSORPTION OF LIQUID WATER IN SPECIMENS OF COATED CLADDING OF NORWAY SPRUCE (*PICEA ABIES* [L.] KARST.)

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Background

- Performance when exposed to water is one of the most important properties of wooden claddings; water is essential for decay.
- The majority of decay cases in wood in use is associated with exposure to liquid water.

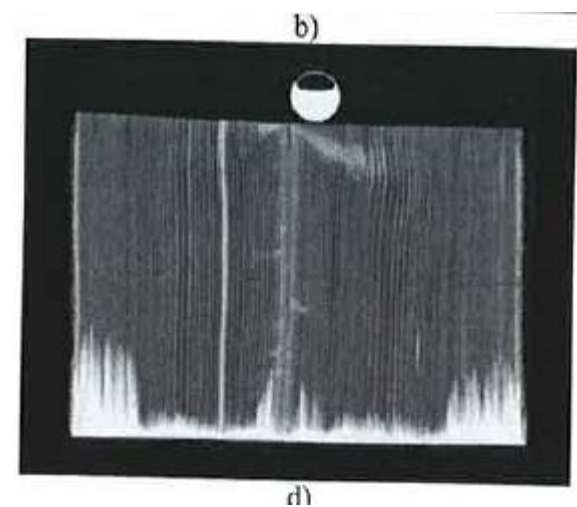
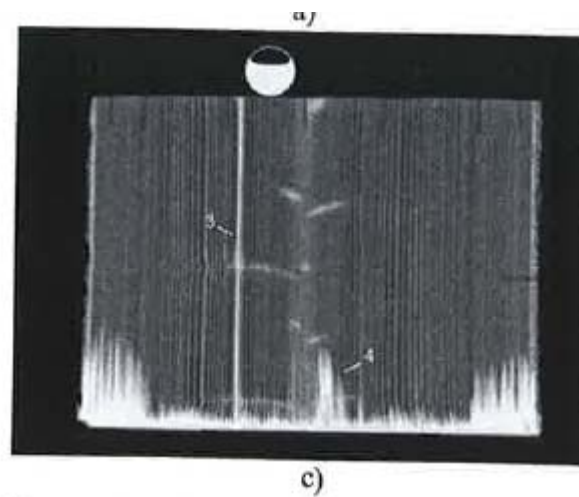
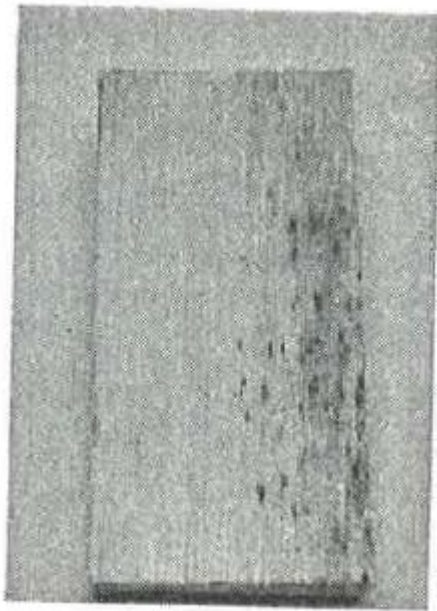


Photo: Mycoteam



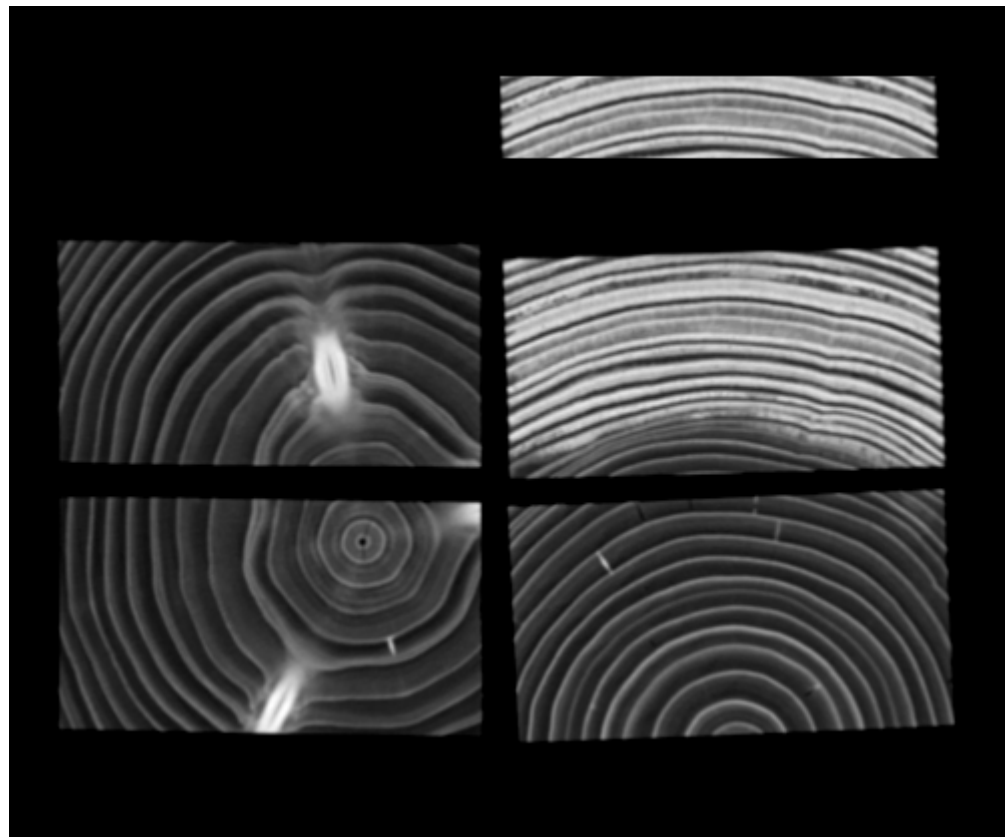
Photo: Mycoteam

- Performance is influenced by coating and wood substrate in interaction.
- Previous studies have shown influence from spruce heartwood in uncoated specimens.



Bergström and Blom 2006; Sandberg 2002

- Heartwood proportion measured visually on CT scans.



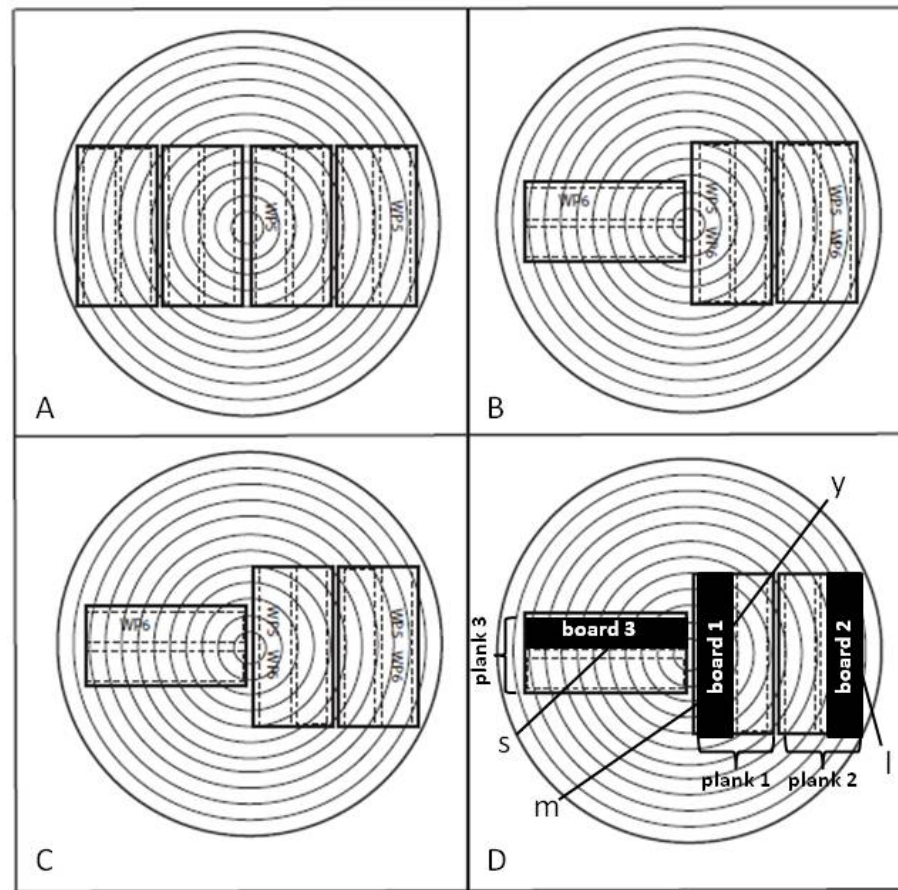
- Effect from heartwood content in uncoated Norway spruce has been shown earlier in the same project; Heartwood proportion was the most important wood property regarding capillary uptake of water.

Sivertsen & Vestøl 2011: Liquid water absorption in uncoated Norway spruce (*Picea abies*) claddings as affected by origin and wood properties

Material and methods

- Same material as in the previous presentations.
- Different sub-samples used for outdoor and QUV exposure.

- Outdoor: m, l, s – first and second logs
- QUV: m, y, l, s – butt logs only



Diameter 27-30 cm

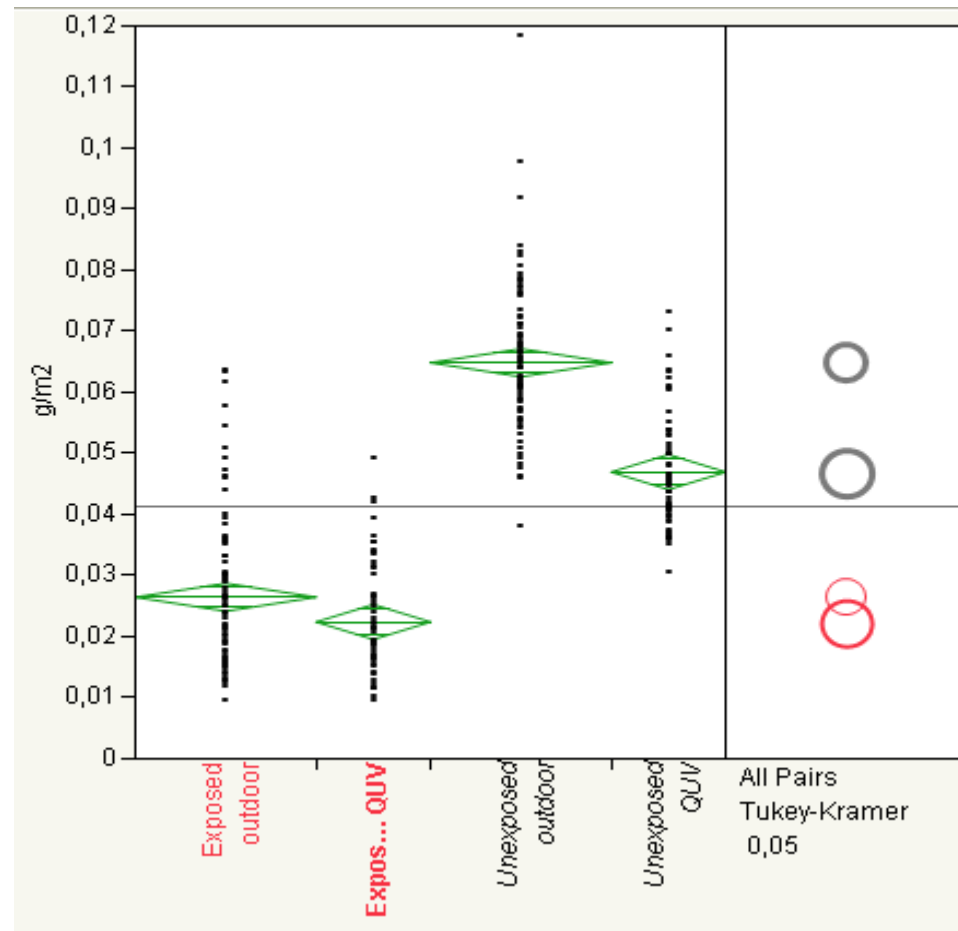
Diameter 32-35 cm

Methods: Exposure and floating

- QUV (but no sprinkling) 3000 h.
- Outdoor exposure, 45° towards the south, one year.
- Floating based on EN 927-5.
- Same floating procedure, but different duration of floating. Outdoor exposed specimens floated until 1008 hours.

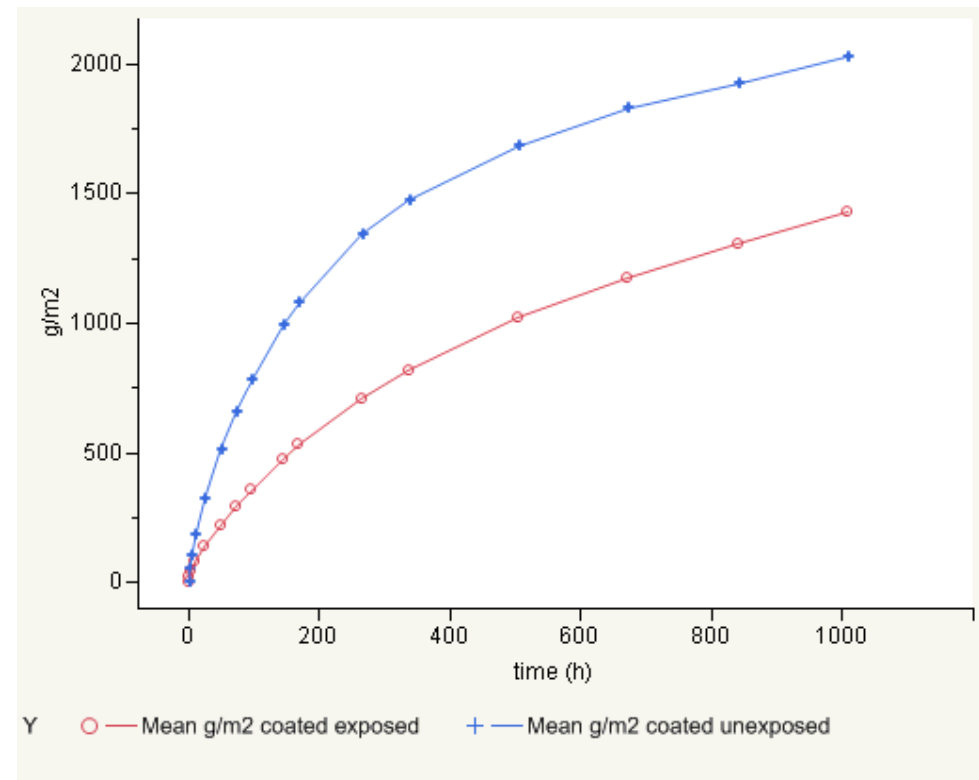
Results

- Water uptake was higher before than after exposure.



- Both exposures: Larvik higher water uptake than Toten.
- Outdoor exposure: heartwood had negative influence on water uptake, causing difference between inner and outer boards.
- Origin still had significant influence when measured wood properties were accounted for.

- Outdoor exposed: difference in water uptake between exposed and unexposed more pronounced in the beginning of the floating.



- Initial difference due to changes in coating, wood properties probably not much altered.

Discussion

- Similar difference in water uptake before and after weathering in both exposures
 - Indicates that short-term exposure and QUV exposure can be used to assess effect of ageing on water uptake.
- Lower uptake after exposure in both exposures
 - should indicate that this is mainly due to UV radiation, despite some leaching due to condensation.

Discussion

- Heartwood most important in outdoor exposed specimens; not measured in enough of the QUV specimens.
- Significant site effect indicates influence from wood properties that have not been measured.
 - Grain angle, proportion of bordered pits, other?

Thank you for your attention!

