

Services: Coating Technology

Wood coatings play an important role in the performance of wood-based products for interior and exterior applications.

Assessing the performance requires a combined knowledge of both wood and coatings.

NTI's wood coatings laboratory provides a wide range of services, depending on the needs of our customers and partners:

- Applied scientific research projects
- Short-term support of product development
- Troubleshooting
- Process control and optimization
- Damage inspections
- Training and education
- Environmental assessments (LCA and EPD)
- Service life prediction of coated wood components



Testing methods

We offer testing according to standardized methods. In addition, we have established in-house standards for tailor-made testing of specific products like decking.

Type	Standard
Accelerated weathering	EN 927-6 (QUV chambers)
Accelerated weathering for deckings	House standard
Adhesion (cross-cut test, pull-off)	EN ISO 2409, EN ISO 4624
Air inclusions/microfoam	EN 927-11
Application properties	House standard
Appearance (evenness, flow-out, sheen)	House standard
Colour analysis (spectrophotometer and A3-scanning)	EN ISO 11664-4
Colour stability/effect of light exposure	EN 15187
Density (pycnometer)	EN ISO 2811
Film hardness (pencil test)	EN ISO 15184
Film thickness, dry and wet	EN ISO 2808
Gloss	EN ISO 2813
Natural weathering at 45° south	EN 927-3 (test field in Sørkedalen)
Natural weathering at 90°, north and south	House standard (test field in Sørkedalen)
Liquid water permeability	EN 927-5
Moisture buffer value	NORDTEST method
pH	House standard
Resistance to abrasion	DIN 68861-2, EN 15185, EN ISO 7784-1 and -2
Resistance to blocking	EN 927-10
Resistance to heat (dry and wet)	DIN 68861-7/-8, EN 12721, EN 12722
Resistance to impact	EN 927-13
Resistance to knot staining	EN 927-7
Resistance to liquids (chemical attack)	DIN 68861-1 and EN 12720
Resistance to scratches	DIN 68861-4 and EN 15186
Solids	EN ISO 3251
Surface roughness	House standard
Water vapour permeability	EN ISO 12572, ISO 7783
Wear resistance	ISO 7774, Tab abraser
Viscosity	EN ISO 2884-1, EN ISO 2431

Facilities for application and drying of coatings

- High speed disperser
- Brushing
- Film applicators
- Spraying (airless, HVLP/XVLP)
- Convection drying

Process control and optimization

- Application processes
- Drying and UV-hardening
- Climate monitoring in production, during storage, and transport
- Statistical quality control



Weather resistance in artificial/accelerated atmosphere.



Analytical methods

- Light microscopy (bright field, dark field, phase contrast, fluorescence)
- Electron microscopy (SEM at partnering institute)
- FTIR-ATR spectroscopy
- Element analysis (XRF)
- Contact angle/surface energy
- Climate sensor box for inline real time measurements in coating lines
- UV-radiometer

Weather resistance in natural atmosphere on test field.

Hygrothermal modeling

Coatings may have a significant influence on the moisture content of wood, which in turn determines many critical properties of wood products in interior and exterior applications.

Tretekhnisk offers analysis of moisture dynamics using hygrothermal modeling.

Indoor climate and energy use

Wood changes its moisture content (MC) dependent on the ambient climate.

This material property to absorb and desorb moisture and thereby to moderate the indoor variations in relative humidity (RH) is referred to as moisture buffer capacity (MBC).

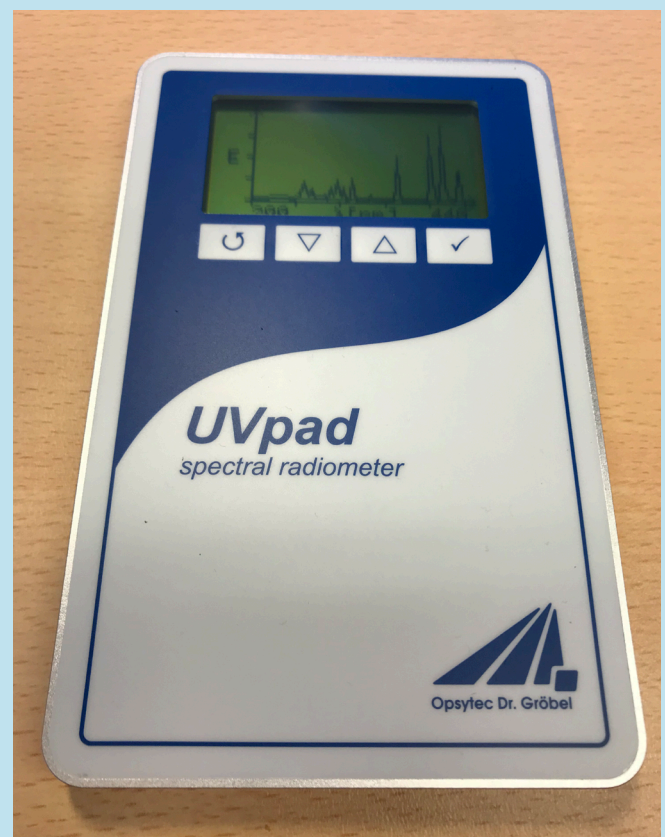
The MBC has been shown to be utilized for improving indoor climate and saving energy. The challenge of fully utilizing wood's MBC is that wood products are usually coated for improving their aesthetics and technical properties; these coatings may significantly reduce the MBC.

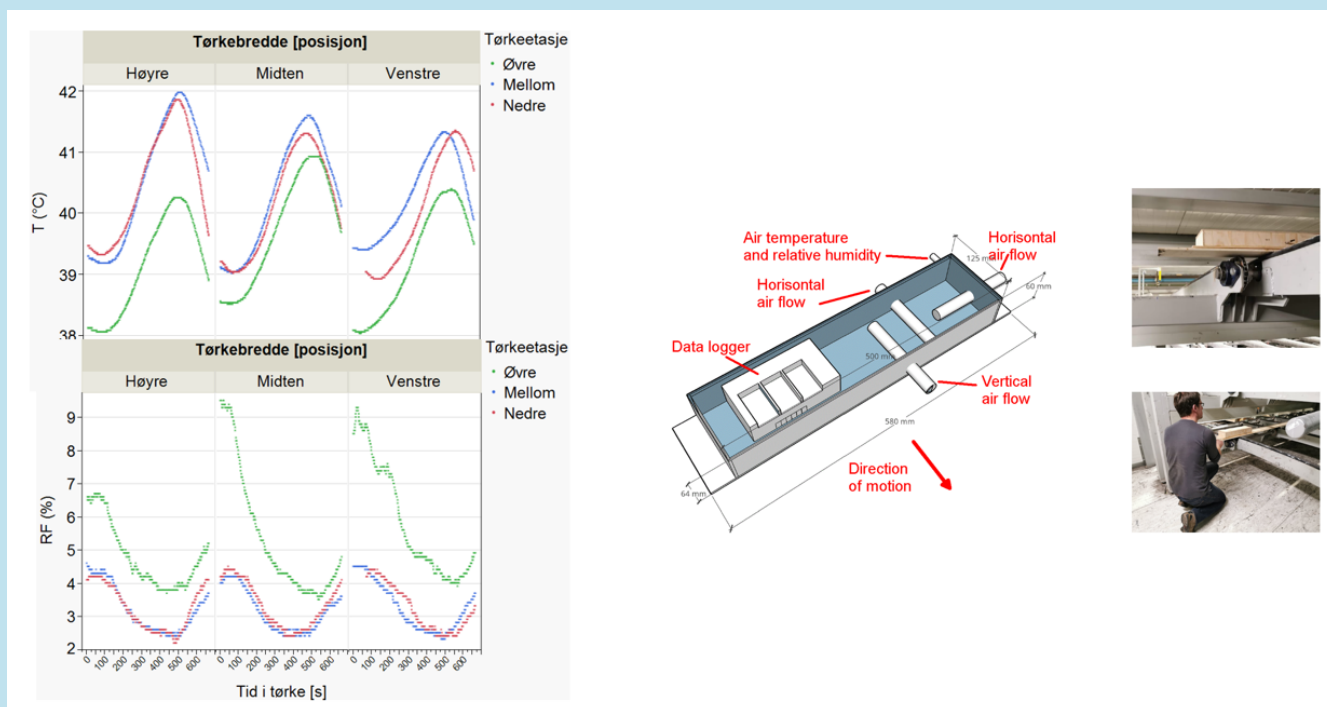
Outdoor performance and service life

Exterior coatings protect wooden components from photodegradation and moisture.

Generally spoken, the protection and maintenance intervals increase with increased film thickness; at the same time, the vapor resistance increases and thereby also the risk of moisture accumulation under the coating film.

This may, at worst, cause wood decay. Hygrothermal combined with decay modeling can assist in the task of determining the threshold for the maximum water vapor resistance of coating systems on wood building products exposed to severe conditions.





Overview of courses offered within coating technology

Chapter	Chapter title	Title paragraph	Presentation	Length (min)
6.1	Hvorfor overflatebehandle og hva er spesielt med tre som substrat?	Innledning	1	13
		Markedsoversikt	2	10
		Tre i bevegelse	3	10
		Heft, del 1 / del 2	4 / 5	13 / 10
		Fotostabilitet	6	12
		Misfarging	7	10
6.2	Hvordan klargjøre tre for overflatebehandling?	Sparkling og fjerning av harpiks	1	9
		Sliping	2	11
		Rengjøring fra lim og flekker	3	7
		Fargegivende forbehandling	4	9
6.3	Hvilke typer overflatebehandling finnes det?	Produkttyper og sammensetning	1	14
		Bindemidler, del 1 / del 2	2 / 3	15 / 9
		Interiørprodukter, del 1 / del 2	4 / 5	9 / 10
		Eksteriørprodukter	6	15
6.4	Hvordan påføres og tørkes/herdes overflatebehandlingsprodukter?	Påføringsmetoder, del 1 / del 2	1 / 2	10 / 16
		Tørking, del 1 / del 2	3 / 4	16 / 12
6.5	Hva er miljøvennlig og hva er den siste utviklingen?	Miljøvurdering LCA og EPD	1	15
		FoU og utblikk	2	15

Treteknisk



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