



ADHESION STRENGTH AND GLOSSINESS OF COATED SURFACES MADE OF ALDER WOOD AS FUNCTION OF THEIR SURFACE ROUGHNESS

Emilia-Adela Salca, Tomasz Krystofiak, Barbara Lis

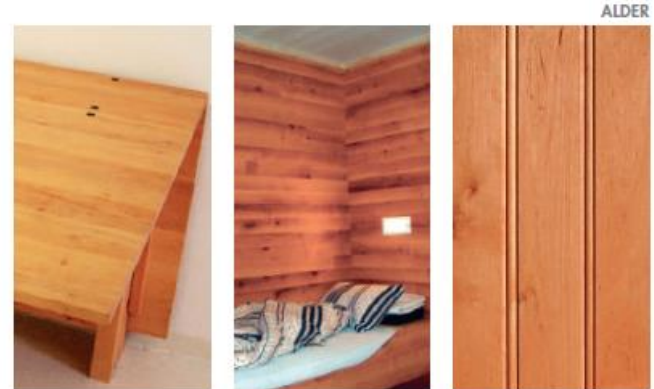
HYGROTHERMAL PERFORMANCE OF BUILDINGS AND THEIR MATERIALS

**Joint Conference: COST Action FP 1303 „Performance bio-based building materials”
& DURAWOOD Project „Superior bio-friendly systems for enhanced wood durability”**

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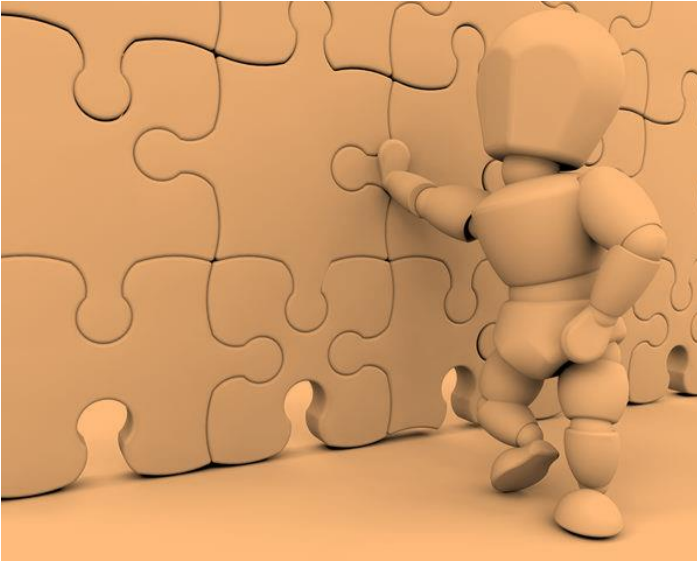
Introduction

- Most customers looking to buy furniture products make their choice based on their visually evaluation at first glance.
- Finishing is the most popular method to protect any product surface that will improve its appearance and extent its service life.



Source: www.tracentrum.se

Objective



- The present study focuses on some coating properties of wooden samples made of black alder wood (*Alnus glutinosa* Gaertn. L.).
- Adhesion strength and surface glossiness of coated surfaces were evaluated as a function of two eco-varnish types (100%UV and water-borne varnish) correlated to the surface preparation by sanding.

Our team at Remmers



Material and method

- Planed samples were sanded parallel to the grain with two combinations of grit size sandpapers:
 - 60, 150
 - 60, 100, 150
- A wide-belt sander machine was used.
- The surface roughness (R_k) was measured with a MicroProf FRT profilometer.



Wide belt sander machine



MicroProf FRT profilometer

Material and method

- Application by spraying
- 100% UV varnish (A) and water-borne (B) varnish
- Two layers of coating with a light sanding (220 grit size) between them
- a UV curing unit (for A)
- laboratory conditions (for B)



Application by spraying



UV curing unit

Pull-off test and gloss

- The pull-off test was performed with a PosiTest-AT type adhesion tester and for gloss measurements the PICO GLOSS 503 gloss meter was used.

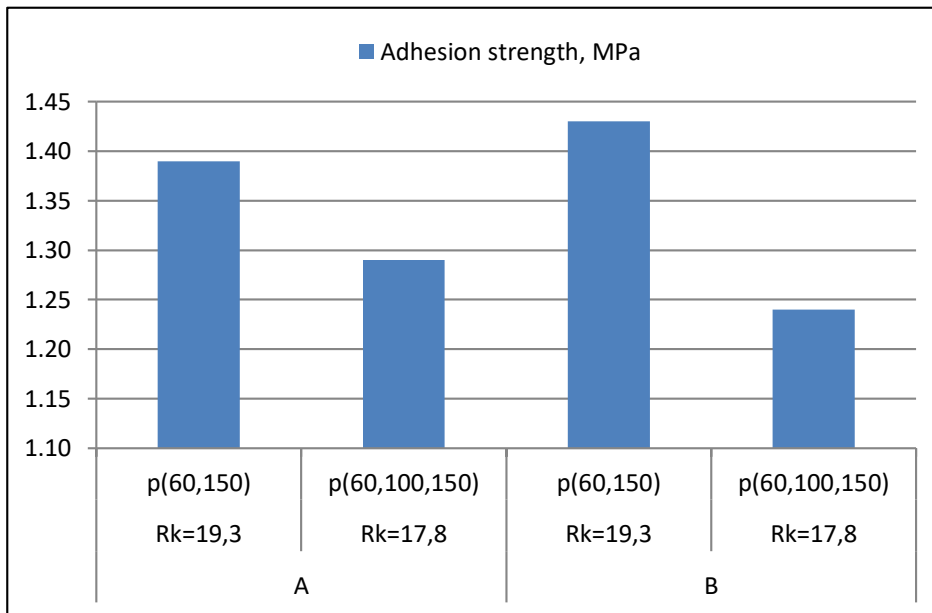


PosiTest-AT

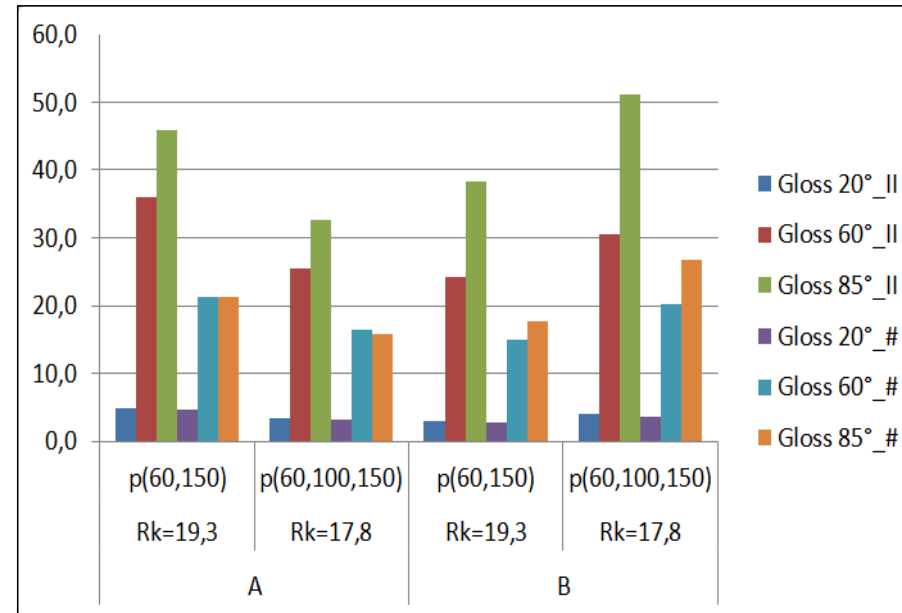


PICO Gloss 503

Results



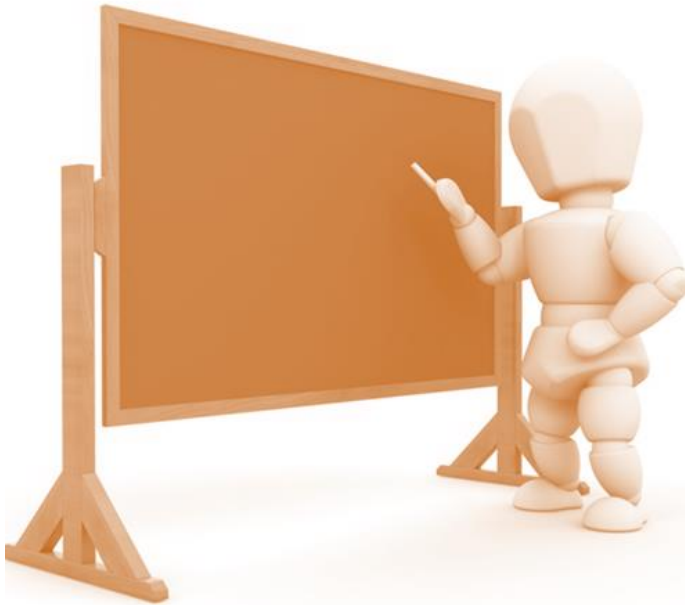
a



b

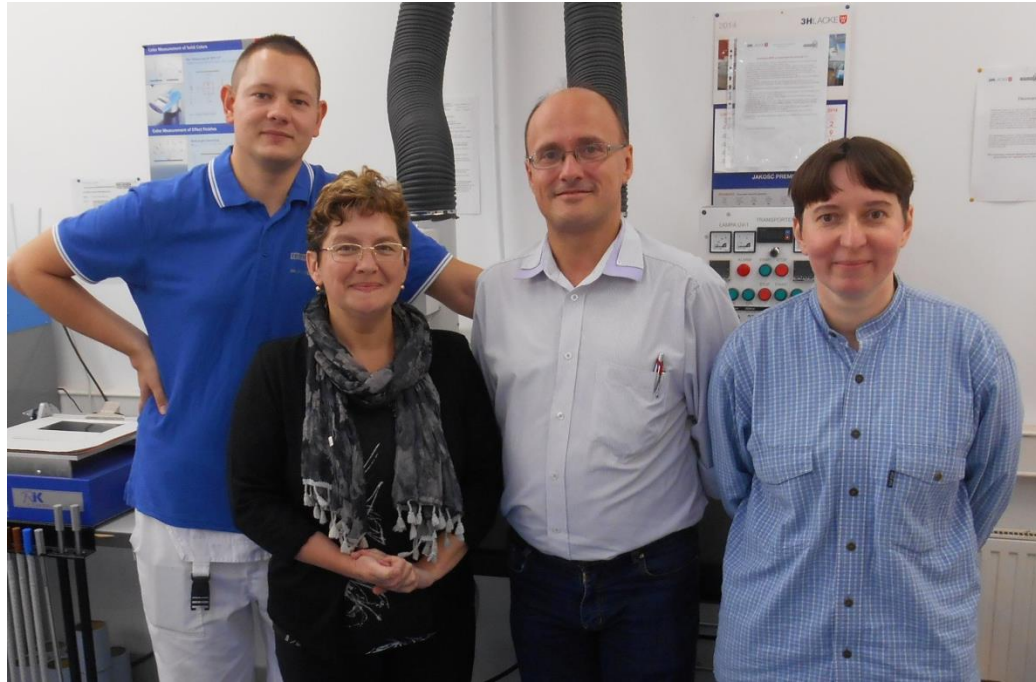
Variation of adhesion strength (a) and gloss (b) as a function of surface roughness and varnish type

Conclusive remarks



- There is a balanced relationship between the substrate preparation and coating material, which further influences the coating performance.
- Results of this experimental work could be used for the furniture manufacturing sector.
- The finishing process may be improved to achieve value-added products.

Acknowledgements



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Thank you for your attention!

