



FACTORS AFFECTING THE SURFACE FINISHING OF OSB AND PARTICLE BOARDS

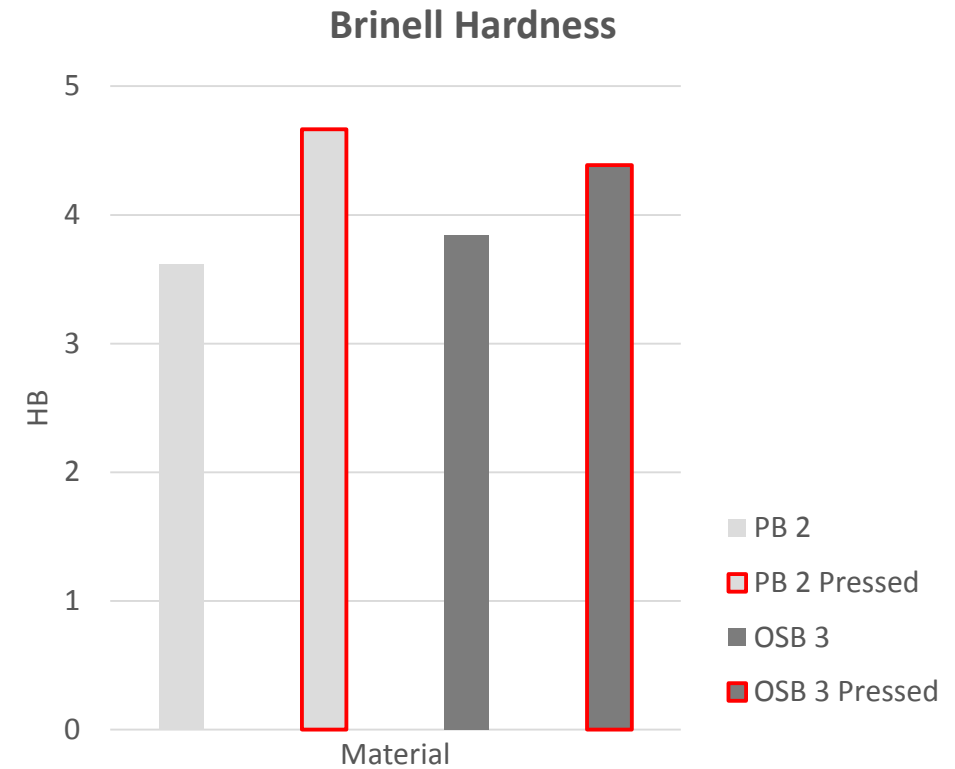
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Materials and methods

- Materials: OSB and Particle Board (PB)
- Surface types: raw, sanded (P80 and P120) and pressed on high temperature (120 °C, 0.8 MPa, 3 min)
- Surface characterization: - Brinell hardness, wetting angle and roughness
- Tests carried out on coated samples: adhesion and water adsorption

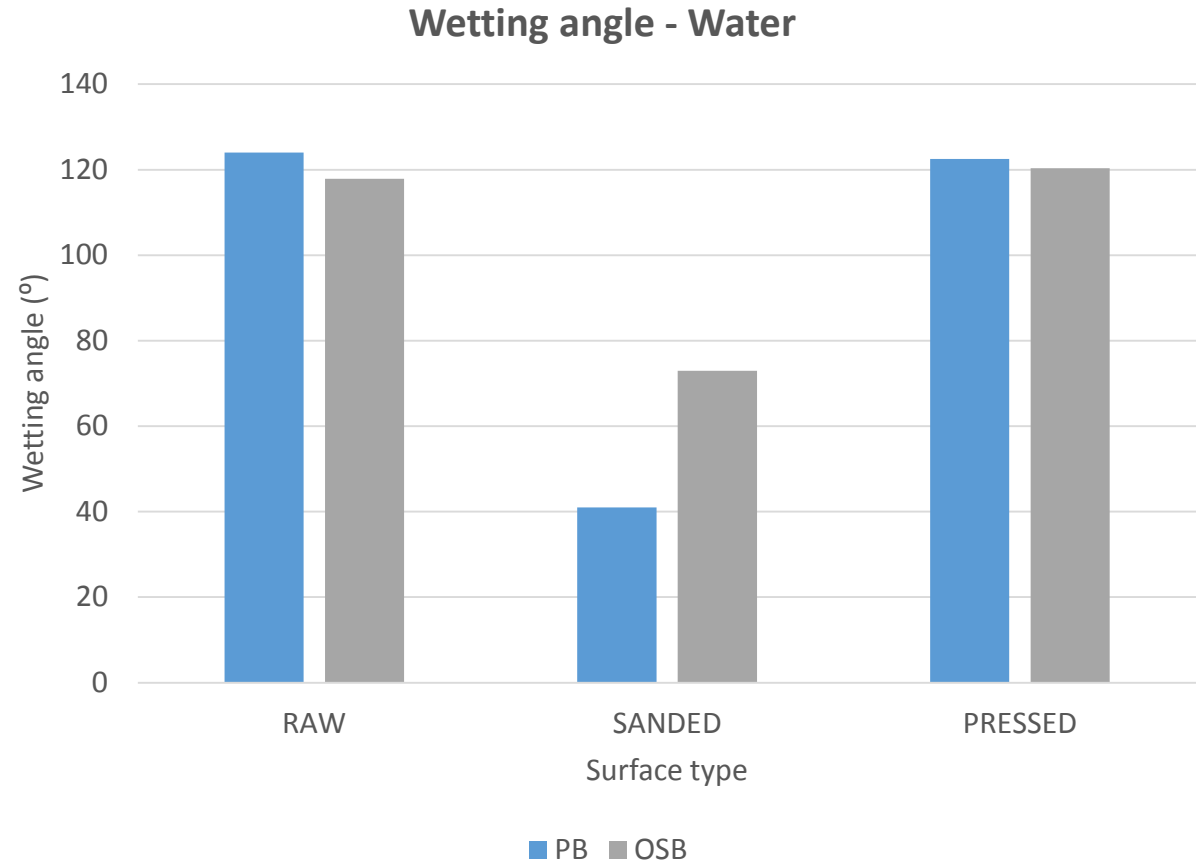
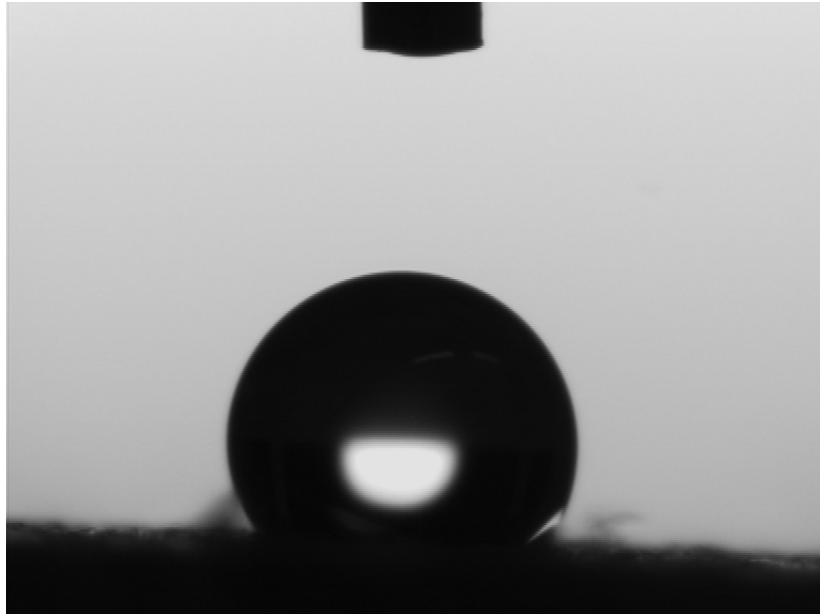
Surface characterization - Brinell hardness

- Standard EN 1534:2010
- Testing of raw and pressed samples
- Changes in hardness: PB \approx 30 %, OSB \approx 15 %



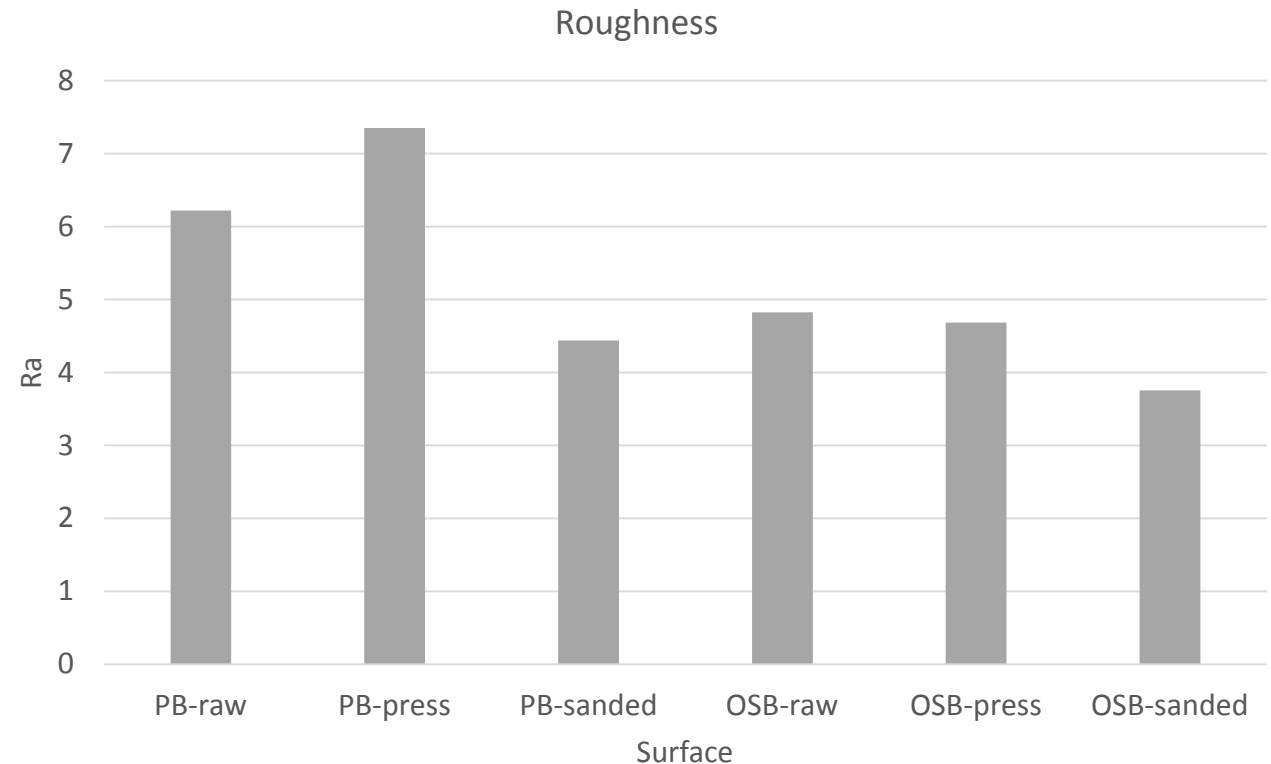
Surface characterization – Wetting angle

- Water
- Drop size: 0.2 μL
- Tested on 6 different surfaces
- Angles were measured after 10 sec

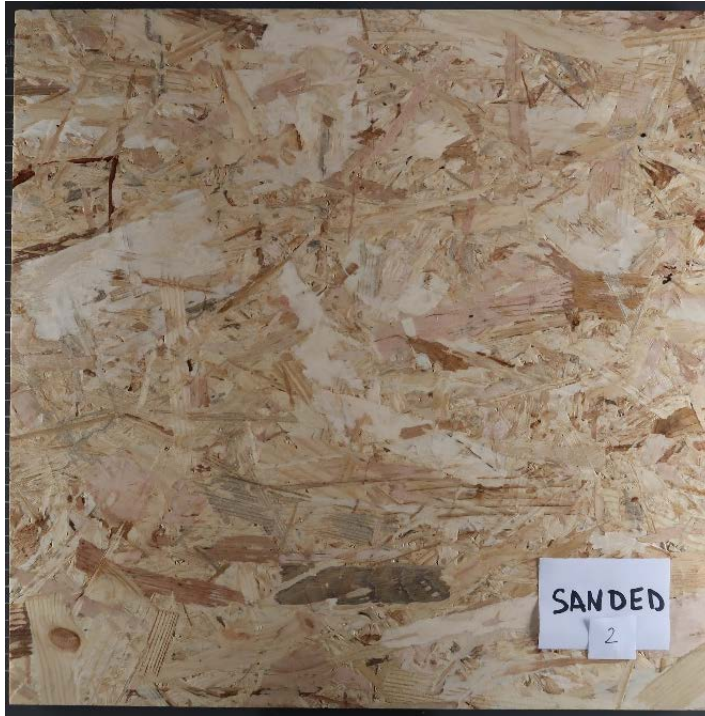


Surface characterization – Roughness

- Stylus type profilometer
- 90° cone diamond tip with radius of 10 μm
- Speed of stylus 1 mm/s
- Cut-off 2.5
- Evaluation length 17.5 mm
- Roughness parameter: Ra



Coatings



1k Acrylic water-based

2 layers: $2 \times 80 \text{ g/m}^2$

Sanding after first layer with P240



2k Polyurethane solvent

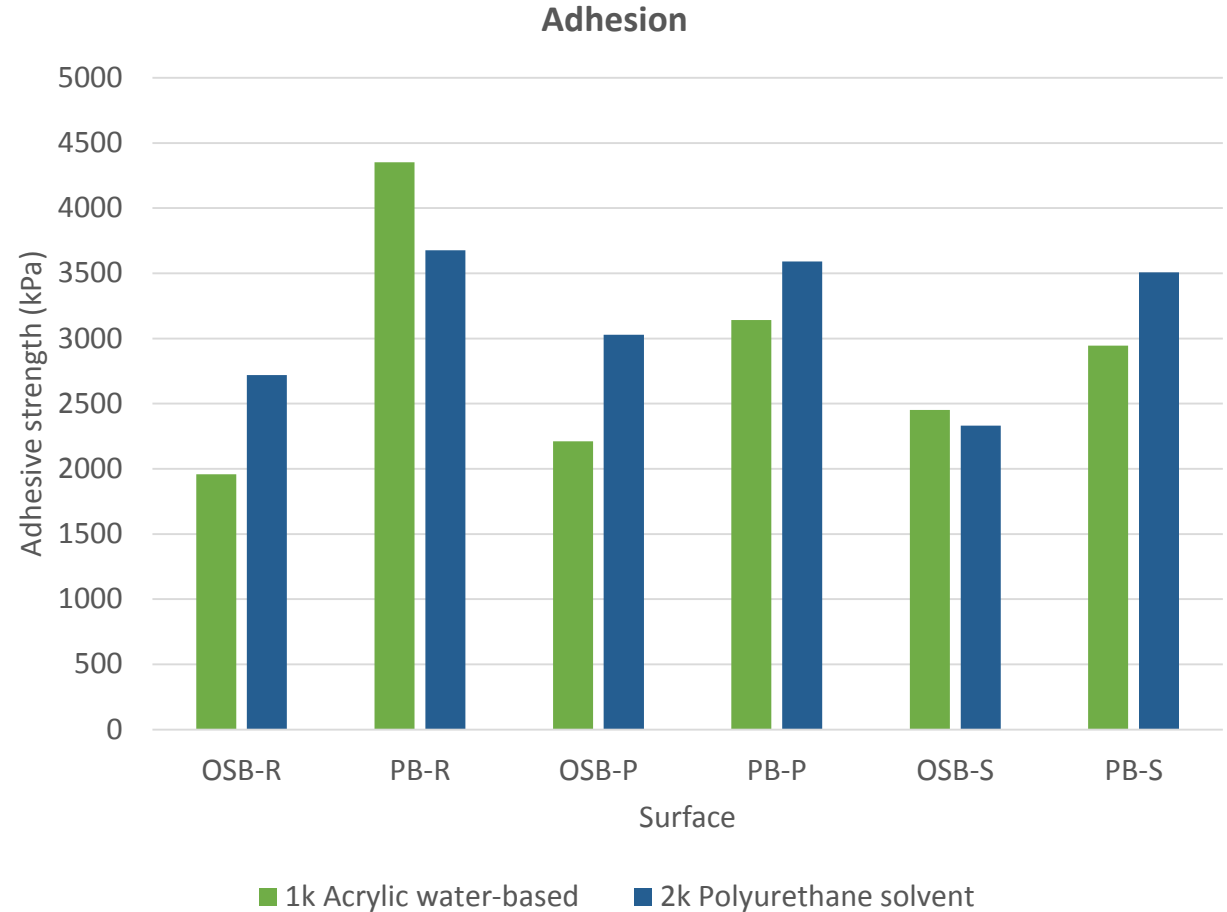
2 layers: $2 \times 100 \text{ g/m}^2$

Sanding after first layer with P240

Mixing ratio 50:50

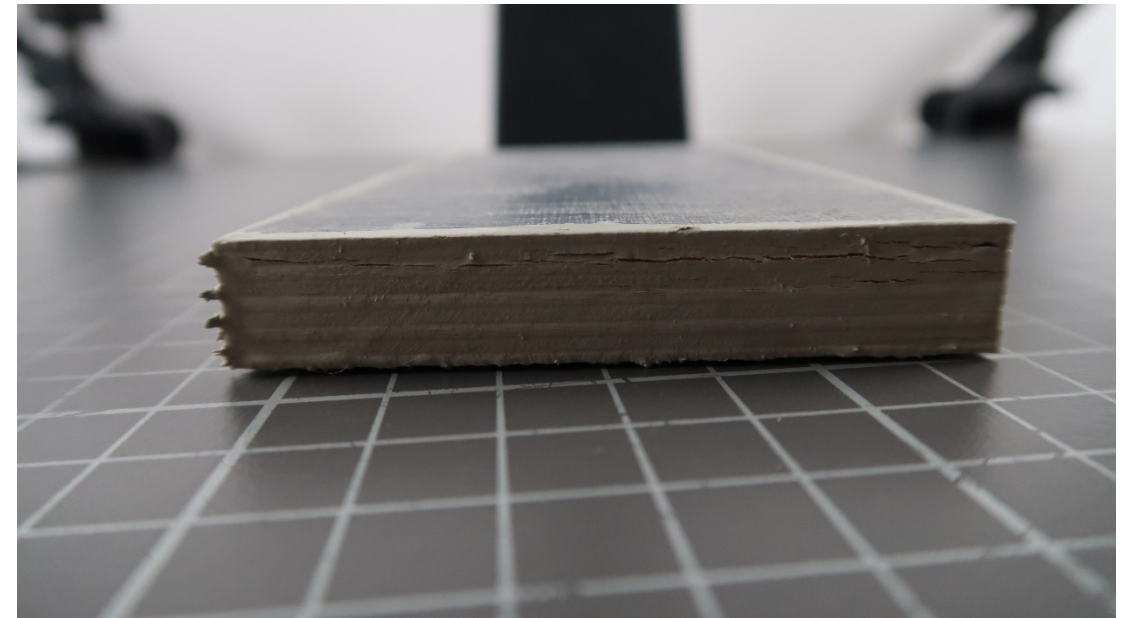
Adhesion

- Pull-Off Test (Standard ASTM D4541)
- 2k epoxy glue was used for dolly
- 5 measurement per surface
- Testing on PATTI instrument after 48 h drying time

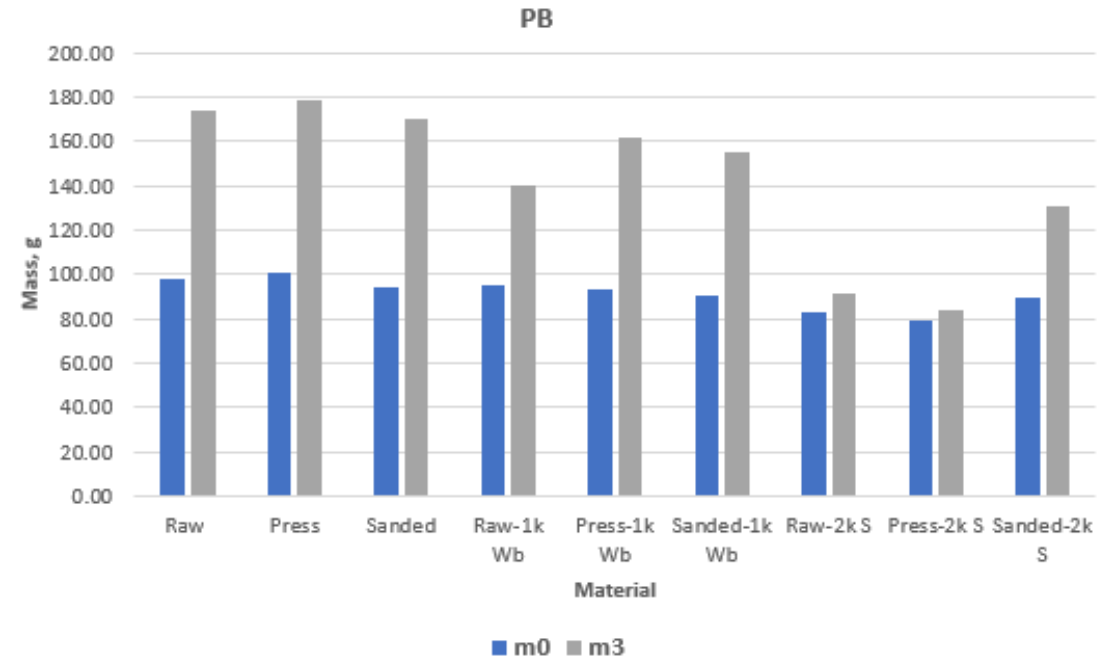
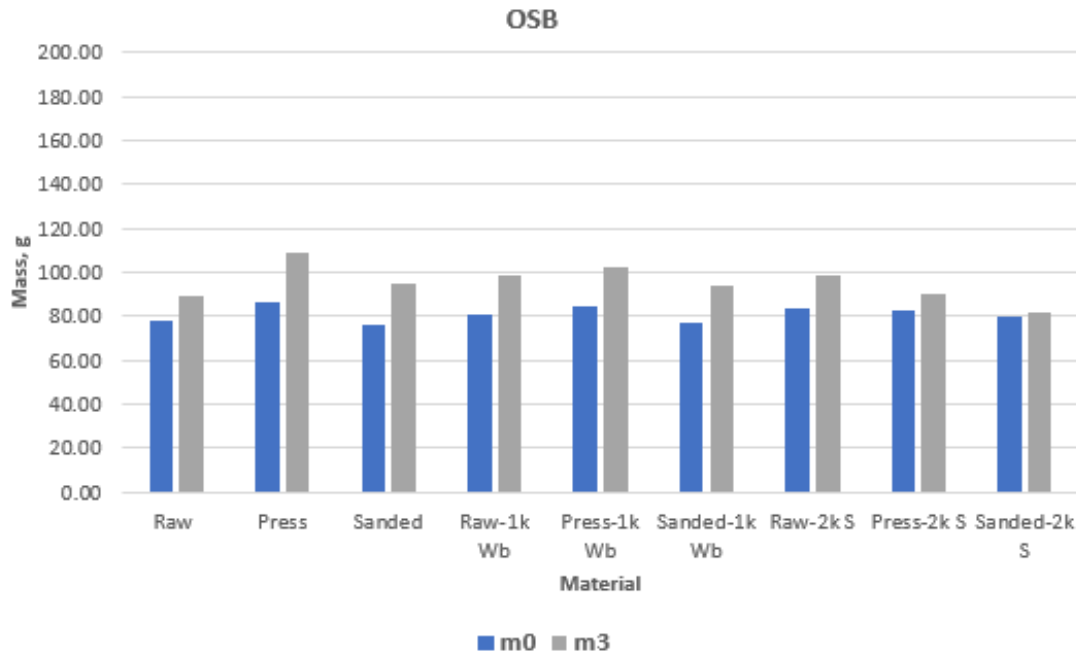


Water adsorption

- Boards dimensions 400 mm × 400 mm were coated in 2 layers
- Samples 150 mm × 74 mm were cut from the boards
- Edges were sealed with epoxy coating in 2 layers
- Samples were immersed in the water upside down for 72 h



Water adsorption



Conclusions

- PB and OSB boards after pressing have a higher hardness
- Sanded samples had better wetting compare to the raw and pressed samples
- Adhesion is higher on PB boards
- OSB samples generally had smaller water uptake compare to the PB samples
- Samples coated with solvent coating were more resistant to water



Questions?

Thank you for your attention!