

Report

from the performance of service work

titled: **“Poldi Hardness Test of Venifloor Veneer Board and a
Three-Layer Board”**

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1. TEST MATERIAL

The test materials were floorboards –Venifloor veneer and a three-layer board – Fig. 1.

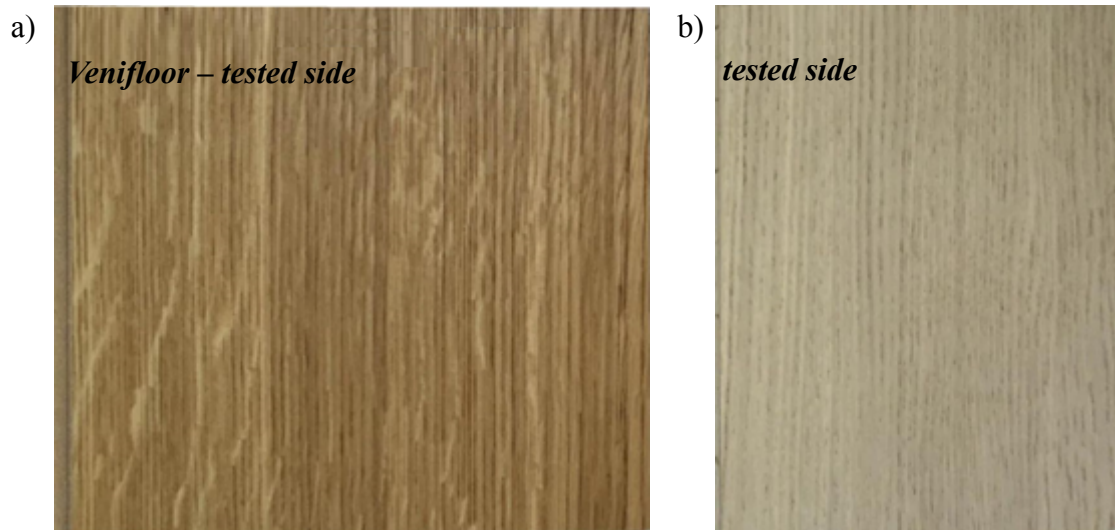


Fig. 1. Floorboards: a) Venifloor veneer; b) three-layer board

2. TEST METHODOLOGY

The purpose of the study was to assess the hardness of the analysed boards using a dynamic method with a Poldi hammer. The test consists of simultaneously pressing a ball into the surface of a reference sample and the surface of the test material. The ball is pressed by hitting the Poldi hammer with a hammer with a force of 49 N – Fig. 2 and 3. Next, the diameters of the indentation are measured: d_1 in the reference plate and d_2 in the test material. The hardness of the test material is determined on the basis of the measurements of the diameters of the indentation with the formula (1):

$$HB = HB_w \frac{D - \sqrt{D^2 - d_1^2}}{D - \sqrt{D^2 - d_2^2}} = HB_w \frac{10 - \sqrt{100 - d_1^2}}{10 - \sqrt{100 - d_2^2}} \quad (1)$$

where:

HB_w – hardness of the reference sample – 199 HB

d_1 – ball indentation in the reference plate, mm

d_2 – ball indentation in the test material, mm

D – measurement ball diameter – 10 mm

The obtained results are the indicative hardness of the test material in Brinell degrees.

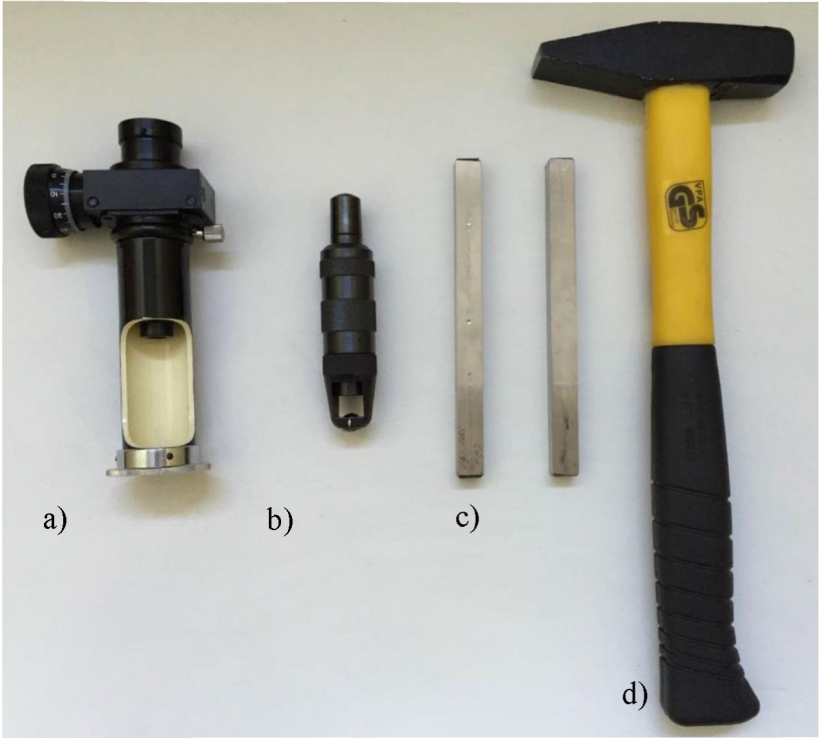


Fig. 2. Tools for Poldi hardness test: a) magnifier; b) Poldi hammer, C) reference sample, d) hammer

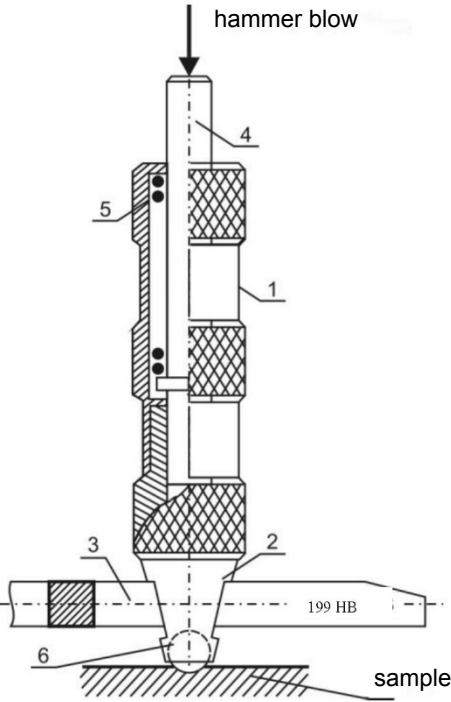


Fig. 3. The principle of operation of the Poldi hardness measurement

1 – Handle; 2 – Ball holder; 3 – Reference plate; 4 – Stud; 5 – Spring; 6 – Ball

3. TEST RESULTS

The results of the test are shown Table 1. Based on the results, different hardness values were found depending on the floorboard used. It was found that Venifloor board has much higher hardness. The hardness value for this sample amounted to 22.72 HB.

Table 1

Hardness test results for two floor boards

No.	Venifloor board HB	Three-layer board HB
1	28.62	8.71
2	17.78	7.06
3	21.70	8.85
4	28.06	5.58
5	20.54	7.96
6	23.63	9.94
7	21.18	9.62
8	26.89	8.21
9	14.31	7.07
10	24.53	7.68
Average value	22.72	8.07
Standard deviation	± 4.57	± 1.30

4. SUMMARY OF THE TEST RESULTS

To sum up, Venifloor board has greater hardness in comparison with the three-layer board, as evidenced by the results of the obtained measurements. Due to the fact that the Poldi hammer method is characterised with a low accuracy of measurements, additional Brinell hardness tests should be carried out.