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INTERNATIONALE EXPERTEN UNION

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1. Ausfertigung

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Preliminary remarks

By telephone and in writing, the applicant – OSBE Parkett, NL-5628 CJ Eindhoven – requested the expert and lecturer Siegfried Heuer/Institut für Fussbodenbau to test the Elastilon product designated "tilo-elasto-fix/Elastilon-Lock" with regard to the characteristic features specific to the material, particularly with regard to the shear strength and thermal resistance, and to set out the results of these tests in the following

Test Report

No. OS-723-2005

A quality certificate referring to the test results will be issued at a later date.

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Telefonische Auskünfte sind nur nach schriftlicher Bestätigung verbindlich.

The aforementioned tests for determining the shear strength and thermal resistance were undertaken in cooperation with the test laboratory eph Entwicklungs- und Prüflabor Holztechnologie GmbH, Dresden, and iff-Prüfinstitut Bau- und Fussbodentechnik, Koblenz.

The following samples/constructions were provided by the applicant for the tests:

- Multi-layer strip flooring, coated, size 900 x 90 x 10 mm
- "tilo-elasto-fix/Elastilon-Lock" product / system

1.0 Tests and test results

1.1 Shear strength

The shear strength was assayed as described in DIN EN 205.

The shear strength of the adhesive bond was determined by applying a tensile force to an area of 157.5 cm² (175 x 90 mm).

The test speed equalled 8 mm/minute.

Ten samples were tested with the "tilo-elasto-fix/Elastilon-Lock" system in the condition on delivery and

another ten after artificial ageing (time-accelerating method / 7 days' storage at a temperature of 50 °C).

Results

Table 1

Version:	Max. shear force in N (n = 10)			Shear strength in N/mm ² (n = 10)		
	\bar{x}	s	v	\bar{x}	s	v
tilo-elasto-fix/ Elastilon-Lock						
On delivery	1149	153	13.3	0.07	0.01	13.0
After ageing	670	65	10.0	0.04	0	9.70

x = Mean value; s = Spread; v = Coefficient of variation

Assessment

The samples of flooring with **tilo-elasto-fix/Elastilon-Lock** have a maximum shear force of 1149 N in the condition on delivery (referred to a panel width of 90 mm).

After artificial, time-accelerated ageing as mentioned above, the strength of the bond was reduced by approx. 40% (670 N).

This was attributable to the partial delamination of the "tilo-elasto-fix/Elastilon-Lock" from the undersides of

the assembled panels following storage at elevated temperature.

The adhesive matting designated "tilo-elasto-fix/Elastilon-Lock" is intended, among other things, to prevent cracks appearing in tongue-and-groove connections.

Requirements with regard to the necessary strengths do not exist.

Due to this fact, the results were subsequently compared with the requirements specified for click connections serving the same purpose and the latter were included in the overall assessment for comparison.

According to ISO/TC 219/WG 03 Rev. 1, the required pull-out forces for click connections for laminate flooring for load classes 22 – 34 range from 2000 N/m to 5000 N/m.

The following results are obtained when calculating the pull-out forces over a width of 1 m (N/m):

tilo-elasto-fix/Elastilon-Lock

- on delivery = 1149 N = 12767 N/m

- after time-accelerated ageing = 670 N = 7444 N/m

It is herewith confirmed that the strength required for locking / maintaining the tongue-and-groove connection is higher than with the aforementioned click connection used in other products of the same or a similar kind.

1.2

Thermal resistance

The following material / samples as defined above was / were used for the tests:

- Multi-layer strip flooring, coated,
size 900 x 90 x 10 mm
- "tilo-elasto-fix/Elastilon-Lock" product /
system

Method

The thermal resistance was tested in accordance with DIN EN 12664.

Two samples measuring 500 x 500 mm from the multi-layer flooring were assembled for the tests.

The type "tilo-elasto-fix/Elastilon-Lock" adhesive matting was affixed to the rear of each sample.

The resultant test specimens were classified as laminated material perpendicular to the heat flow.

The thermal resistance was then assayed in accordance with this classification.

A two-plate unit of type TLP 900-H was used to assay the thermal resistance.

The test specimens were stored in a normal climate at 23 °C / 50% relative humidity until the mass remained constant.

After storage, the specimens were immediately installed in the test unit and the corresponding tests were carried out.

Results

Table 2

Test specimens	Unit of measure	Specimen	
		1	2
Length	mm	500.4	500.3
Width	mm	500.5	500.5
Thickness when installed	mm	11.65	11.65
Bulk density after conditioning	kg/m ³	578	571
Area-related mass after conditioning	kg/m ²	6.7	6.7

Measured values

Measurement No.	ϑ_{wm} [°C]	ϑ_{km} [°C]	$\vartheta_{wm}-\vartheta_{km}$ [K]	ϑ_m [°C]	λ_g [W/(mK)]
1	15.9	5.6	10.2	10.7	0.08311
2	25.9	15.6	10.2	20.8	0.08454
3	35.9	25.6	10.2	30.7	0.08587

- ϑ_{wm} = Mean temperature of the specimen surface facing the hot plate
 ϑ_{km} = Mean temperature of the specimen surface facing the cold plate
 $\vartheta_{wm}-\vartheta_{km}$ = Mean temperature difference
 ϑ_m = Mean temperature of the specimen
 λ_g = Mean thermal conductivity

The following thermal resistance was determined for the flooring construction (multi-layer flooring with adhesive matting of type "tilo-elasto-fix/Elastilon-Lock") at a mean temperature of 10 °C after conditioning:

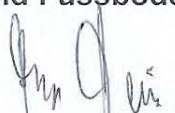
$$R_{23/50}^{10} = 0.140 \text{ (m}^2\text{K)/W}$$

Assessment

DIN EN 12524 does not mention or specify a reference value for the thermal resistance R.

The thermal resistance value of $R \leq 0.15 \text{ (m}^2\text{K)/W}$ required for compatibility with underfloor heating in accordance with the guideline issued by the Federal Panel Heating Association with regard to the use of floor coverings on heated load distribution layers / underfloor heating systems has been met by the tested flooring construction with "tilo-elasto-fix/ Elastilon-Lock" system / adhesive matting.

**iff-Prüfinstitut Bau-
und Fussbodentechnik**


The expert
Siegfried Heuer

(Signature)

