MFPA Leipzig GmbH

Testing, Inspection and Certification Authority for
Construction Products and Construction Types

Leipzig Institute for Materials Research and Testing
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Test Report No. PB 1.5/20-158-1

15 January 2021
No. Copy 1

Contracting body:	Scan Underlay Ursusvej 16 8464 Galten Denmark
Task:	Material tests on impact sound insulation
Material:	Laminate floor covering underlay
Product:	Acoustic Silence 1550
Samples delivery:	18/12/2020
Persons in charge:	Stefan Laut, head of laboratory Dr.-Ing. Stephan Reichel
Testing period:	January 2021

This report consists of 8 pages.

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-11021-01-00

Testing laboratory accredited by DAkkS GmbH according to DIN EN ISO/IEC 17025. The certificate can be seen on www.mfpa-leipzig.de

Notified testing laboratories, inspection bodies and certification bodies recognized according to the Construction Products Regulation (NB 800) and the State Building Code (SAC02).

Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH (MFPA Leipzig GmbH)

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Table of Content

1 Objectives and material delivery

MFPA Leipzig GmbH was commissioned by co. Scan Underlay ApS to test the following properties of the laminate floor covering underlay "Acoustic Silence 1550":

- length and width according to EN 822
- squareness according to EN 824
- thickness according to EN 823
- apparent density / mass per unit area according to EN 1602
- compression behaviour according to EN 826
- thickness and compressibility according to EN 12431
- dynamic stiffness (separate report)

On 18 December 2020, one roll (approx. 7 m x 1 m) of the material was delivered to MFPA Leipzig GmbH.

2 Testing procedure and results

2.1 Length and width in delivery condition

DIN EN 822:2013	Thermal insulating products for building applications - Determination of length and width; German version EN 822:2013
DIN EN 823:2013	Thermal insulating products for building applications - Determination of thickness; German version EN 823:2013

Specimen: material in delivery condition (roll)

Pretreatment: 6 hours storing at 23 °C and 50 % r.h.

Testing device: determination of the length with a measuring tape
determination of the width with a steel ruler

Procedure: The roll is placed on a flat surface and the length is measured directly with a measuring tape and the width with a steel ruler.

Date of testing: 09/01/2021		
specimen [-]	length [mm]	width [mm]
roll	6936	1000
	6950	1000
mean value	**6943**	**1000**

2.2 Squareness in delivery condition

DIN EN 824:2013	Thermal insulating products for building applications - Determination of squareness; German version EN 8242013

Specimen: material in delivery condition (roll)

Pretreatment: 6 hours storing at 23 °C and 50 % r.h.

Testing device: determination of squareness with steel square and feeler gauge

Procedure: A 90° steel square is applied to the edges of the specimen and the deviation between the leg of the steel square and the edge of the specimen is measured with a feeler gauge set.

Date of testing: 09/01/2021		
specimen [-]	deviation of squareness S_{max} [mm/m]	deviation of straightness a_{max} [mm]
roll	8	4

2.3 Thickness / apparent density / mass per unit

DIN EN 822 2013-05	Thermal insulating products for building applications - Determination of length and width; German version EN 822:2013
DIN EN 823 2013-05	Thermal insulating products for building applications - Determination of thickness; German version EN 823:2013
DIN EN 1602 2013-05	Thermal insulating products for building applications - Determination of the apparent density; German version EN 1602:2013

Specimen: 5 samples with dimensions of 200 x 200 mm²

Pretreatment: 6 hours storing at 23 °C and 50% r.h.

Testing device: determination of dimensions with a digital calliper gauge / dial indicator
determination of the mass with precision lab balance

Procedure: The specimen is placed on a flat surface and the dimensions are measured directly with a digital calliper gauge / dial indicator. In addition, the mass is determined by weighing and the mass per unit area and the density is calculated from this.

Date of testing: 08/01/2021					
specimen* [-]	length [mm]	width [mm]	thickness [mm]	mass per unit area [kg/m²]	apparent density [kg/m³]
A-1	198	199	4.5	1.51	332.2
A-2	200	199	4.3	1.28	301.8
M-1	199	199	4.5	1.46	325.9
M-2	199	200	4.9	1.73	353.9
M-3	199	199	4.4	1.39	317.5
mean value	**199**	**199**	**4.5**	**1.5**	**326**

* A- specimen cutted from the beginning of the roll
M- specimen cutted from the middle of the roll

2.4 Compressive strength at 10 % deformation

DIN EN 826 2013-05	Thermal insulating products for building applications – Determination of compression behavior; German version EN 826:2013

Specimen: 5 samples with dimensions of 200 x 200 mm²

Pretreatment: 6 hours storing at 23 °C and 50 % r.h.

Testing device: universal testing machine TT2850 S, force sensor 5 kN

Initial load: 250 Pa

Parameter: compressive force and compressive strength at 10 % deformation

Procedure: The compressive force is increased with constant loading rate until 10 % deformation.

Date of testing: 08/01/2021
loading rate: 0.5 mm/min

specimen*	dimensions		thickness at initial load (250 Pa)	compressive force at 10 % deformation	compressive strength at 10 % deformation
	length	width			
[-]	l [mm]	b [mm]	d [mm]	F_{10} [N]	σ_{10} [kPa]
A-1	199.0	199.4	4.42	142	3.58
M-1	199.3	199.5	5.08	146	3.67
M-2	198.5	199.5	4.52	178	4.49
E-1	201.2	199.4	5.01	88	2.19
E-2	201.3	198.9	4.60	122	3.04
mean value	**200**	**199**	**4.7**	**135**	**3.4**

* A- specimen cutted from the beginning of the roll
M- specimen cutted from the middle of the roll
E- specimen cutted from the end of the roll

2.5 Thickness and compressibility

DIN EN 12431:2013	Thermal insulating products for building applications - Determination of thickness for floating floor insulating products

Specimen: 5 samples with dimensions of 200 x 200 mm²

Pretreatment: 6 hours storing at 23 °C and 50 % r.h.

Testing device: universal testing machine TT2850 S, force sensor 5 kN
determination of lengths and widths with a digital caliper gauge

Procedure: The specimens are subjected to the defined pressure load according to DIN EN 12431. Compressibility c [mm] is the difference between the thicknesses before and after the pressure load.

Parameter:
d_L: thickness of the product under a load of 250 Pa
d_F: thickness of the product under a load of 2 kPa
d_B: thickness of the product under a load of 2 kPa after application of a short time additional load (48 kPa)
c: compressibility, difference between d_L and d_B

Date of testing: 08/01/2021						
specimen [-]	length l [mm]	width b [mm]	thickness d_L [mm]	thickness d_F [mm]	thickness d_B [mm]	compressibility c [mm]
M-1	200	200	4.60	4.27	4.05	0.55
M-2	200	200	4.51	4.22	4.00	0.51
E-1	200	200	5.38	4.90	4.60	0.78
mean value	**200**	**200**	**4.8**	**4.5**	**4.2**	**0.6**

* A- specimen cutted from the beginning of the roll
M- specimen cutted from the middle of the roll
E- specimen cutted from the end of the roll

3 Summary

The results of the tests carried out at the laminate floor covering underlay "Acoustic Silence 1550" are summarized in the table below.

Material property	Test standard	Result
length[1)]	EN 822	6943 mm
width[1)]	EN 822	1000 mm
mass per unit area	EN 1602	1.5 kg/m²
compressive strength σ_{10} at 10 % deformation	EN 826	3.4 kPa
compressibility c	EN 12431	0.6 mm

1) dimensions of the delivered sample (roll)

The results of the tests exclusively relate to the items tested. This document does not replace a certificate of conformity or suitability according to national and European building codes.

Leipzig, 15 January 2021

MFPA Leipzig GmbH SAC 02 NB 0800

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Construction Products and Construction Types

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Recognized Testing Laboratory by the VMPA
Acoustic Testing VMPA-SPG-129-97-SN

Test Report No. PB 2.3/21-003-1

15 January 2021
No. Copy

Subject matter: Measurement of Dynamic Stiffness in accordance with DIN EN 29052-1 of an impact sound insulating material named *Acoustic Silence 1550*

Client: Scan Underlay ApS
Ursusvej 16
8464 Galten – Denmark

Order date: 04-01-2021

Test date: 15-01-2021

Handled by: D. Erler, B. Sc.
Dipl.-Phys. D. Sprinz

This test report consists of 3 sheets.

DAkkS Deutsche Akkreditierungsstelle D-PL-11021-01-00

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1. Task specification

The Dynamic Stiffness of an impact sound insulating materials named *Acoustic Silence 1550* shall be measured in accordance with DIN EN 29052-1 by order of the client

Scan Underlay ApS
Ursusvej 16
8464 Galten – Denmark

Dynamic Stiffness s' according to DIN EN 29052-1 is to quote as result.

2. Test procedure

Measurement of Dynamic Stiffness was carried out according to:

- DIN EN 29052-1: Acoustics; determination of dynamic stiffness; part 1: materials used under floating floors in dwellings; german version EN 29052-1, Ausgabe August 1992

Test setup was arranged according to figure 1 a) and test procedure was met point 7.3 of DIN EN 29052-1. Exitation was realized with an impuls, acceleration was measured for determination of resonant frequency.

Preparation:
Three test specimen of the material were used, according to DIN EN 29052-1. Each of the three test specimen was covered with a water-resistant foil of 0.02 mm thickness. Upon the foil a gypsum layer with 5 mm thickness was applied and a steel plate embedded.

3. Test results

- ***impact sound insulating material Acoustic Silence 1550***

Dynamic Stiffness s' according to EN 29052-1							
Size of test specimen: 200 mm x 200 mm							
Test specimen No.	Mass [g]	Thickness under static load [mm]	Weight per unit area [kg/m²]	Frequency [Hz]	s'_t [1)] [MN/m³]	s'_a [MN/m³]	s' [MN/m³]
1	63	4	1,58	78	50,2	27,8	78,0
2	65	4	1,63	78	50,2	27,8	78,0
3	68	4	1,70	80	52,7	27,8	80,5
Average	**65**	**4**	**1,63**	**79**	**51**	**28**	**79**

tested on: 15-01-2021
Conditions in the testing laboratory:
temperature: 21 °C Air humidity: 45 %

[1)] Apparent dynamic Stiffness

The dynamic Stiffness s' was determined acc. to point 8.2 b) of DIN EN 29052-1:

$$s' = s'_t + s'_a$$

The value s'_a was calculated according to DIN EN 29052-1 using the following equation:

$$s'_a = 111 / d$$

The result for the dynamic Stiffness s' according to DIN EN 29052-1 is:

s' = 79 MN/m³

There were used metrological determined values of the air flow resistivity from the testing institute for the determination of the dynamic Stiffness s'_a of the enclosed air. The value s'_a was determined acc. to point 8.2 b) of DIN EN 29052-1.

4. Note

The sound insulation material was delivered to MFPA Leipzig GmbH on 18-12-2020. 3 test specimen were cut out randomly from this material for the measurement by craftsmen of MFPA Leipzig GmbH. The 3 specimens were consecutively numbered. The mass of the load-bearing plate with the embedded, hardened gypsum layer was determined on the test date for each specimen.

In Germany for insulation materials that do not comply with DIN 4108-10, application abbreviation DES, the value of the dynamic stiffness s' must not be used to determine the impact sound reduction according to DIN 4109-34: 2016-7, Equation 3 and Figure 1, Equation 5 and Figure 2.

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Leipzig, 15 January 2021

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