MFPA Leipzig GmbH

Leipzig Institute for Materials Research and Testing

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

Business Division I:
Building Materials and Building Physics
Head of Division:
Dipl.-Ing. Marko Orgass
Tel.: +49 (0) 341-6582-158
Fax: +49 (0) 341-6582-198
werkstoffe@mfpa-leipzig.de

Work Group 1.5
Building Physics and Masonry

Contact Person:
Dr.-Ing. Stephan Reichel
Tel.: +49 (0) 341-6582-190
reichel@mfpa-leipzig.de

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

Test Report No. PB 1.5/24-041-1

20 June 2024
No. Copy 1

Contracting body: Scan Underlay
Ursusvej 16
8464 Galten
Denmark

Task: Material tests on a sound insulation product

Product: Acoustic Silence 1050 - 5

Samples delivery: 15/03/2024

Testing period: April 2024 – June 2024

Persons in charge: Dr.-Ing. Stephan Reichel
Stefan Laut, Head of Laboratory

This report consists of 10 pages.

Table of Content

1 Objectives and material delivery

MFPA Leipzig GmbH was commissioned by co. Scan Underlay to test the following properties of the sound insulation product “Acoustic Silence 1050 - 5“:

- length and width according to EN 822
- squareness according to EN 824
- apparent density and mass per unit area according to EN 1602
- compression behaviour according to EN 826
- thickness and compressibility according to EN 12431
- deformation under specified load and temperature conditions EN 1605

On 15 March 2024, four rolls of the material were delivered to MFPA Leipzig GmbH. Further information on the material is not available.

Fig. 1: Acoustic Silence 1050 - 5

2 Testing procedure and results

2.1 Length (l) and width (w) according to EN 822

DIN EN 822 2013-05	Thermal insulating products for building applications - Determination of length and width; German version EN 822:2013

Conditioning:	Storing at (23 ± 5) °C and (50 ± 5) % relative humidity for at least 6 h
Specimen:	Material in delivery condition (roll)
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.

Table 1: Length and width

Date of testing: 18/04/2024						
Specimen	Length l [mm]			Width w [mm]		
[-]	Roll 1	Roll 2	Roll 3	Roll 1	Roll 2	Roll 3
1	11863	11875	11860	996	995	996
2				995	995	999
3				997	998	999
4				1000	1001	1001
5				1000	1000	1002
mean value	**11865**			**998**		

2.2 Squareness according to EN 824

DIN EN 824 2013-05	Thermal insulating products for building applications - Determination of squareness; German version EN 824:2013

Conditioning:	Storing at (23 ± 5) °C and (50 ± 5) % relative humidity for at least 6 h
Specimen:	A section of approx. 0.6 m in length was cut from the beginning and end of each roll. The squareness was checked at the original edges.
Testing device:	Steel angle 90° feeler gauge set
Procedure:	A 90° steel angle is applied to the edges of the test specimen and the deviation between the leg of the metal angle and the edge of the test specimen is measured using a feeler gauge set.

Table 2: Squareness

Date of testing: 25/04/2024			
Roll [-]	Measurement location [-]	Specimen [-]	Deviation from squareness S_{max} [mm/m]
Roll 1	Start of the roll	A1	9.1
	End of the roll	E1	13.3
Roll 2	Start of the roll	A2	13.3
	End of the roll	E2	9.3
Roll 3	Start of the roll	A3	8.9
	End of the roll	E3	2.9
		Maximum value	**13.3**

2.3 Apparent density and mass per unit area according to EN 1602

DIN EN 1602 2013-05	Thermal insulating products for building applications – Determination of the apparent density; German version EN 1602:2013

Conditioning:	Storing at (23 ± 5) °C and (50 ± 5) % relative humidity for at least 6 h
Specimen:	ca. 600 mm x 1000 mm x 5 mm
Testing device:	Measurement of length, width and thickness with a digital calliper gauge Determination of mass with scale
Procedure:	The dimensions are determined according to DIN EN 822 and DIN EN 823. The mass is determined by weighing and mass per unit area respective the density is calculated from this.

Table 3: Apparent density and mass per unit area

Date of testing: 24/04/2024						
Specimen-No.	Length	Width	Thickness	Mass	Mass per unit area	Raw density
	l	b	d	m	m/A	ρ
[-]	[mm]	[mm]	[mm]	[g]	[kg/m²]	[kg/m³]
A1	600	996	5.1	654	1.09	215.4
E1	620	1005	4.9	717	1.15	235.2
A2	606	999	5.1	663	1.09	216.8
E2	624	1004	4.8	735	1.17	243.6
A3	607	999	5.1	663	1.09	214.9
E3	612	1003	5.4	688	1.12	208.4
Mean value	**611**	**1001**	**5.0**	**686**	**1.12**	**225.2**

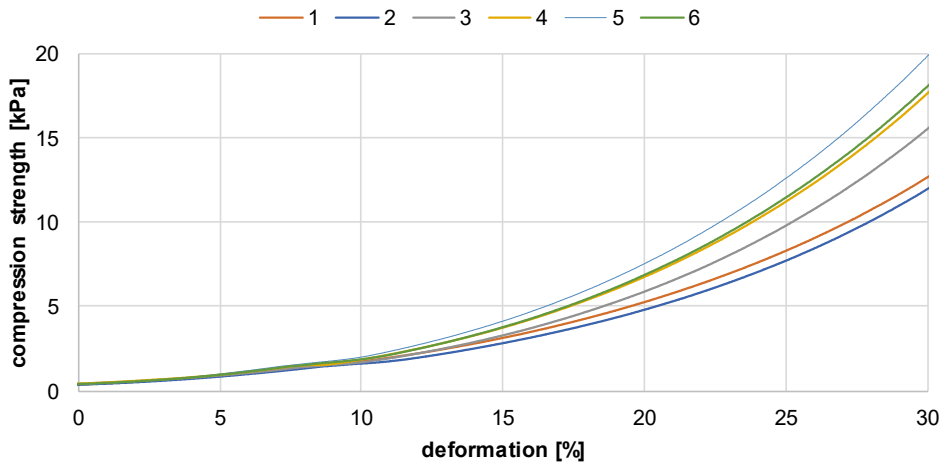
2.4 Compression behaviour (CS) according to EN 826

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

Conditioning:	Storing at (23 ± 5) °C and (50 ± 5) % relative humidity for at least 6 h
Specimen:	6 samples with dimensions of 200 x 200 mm²
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 of 0.5 mm/min until 10 % deformation.

Table 4: Compression behaviour

Date of testing: 25/04/2024					
No. [-]	Length l [mm]	Width w [mm]	Initial thickness (250 Pa) t [mm]	Compressive force at 10 % deformation F_{10} [N]	Compressive strength at 10 % deformation σ_{10} [kPa]
A1	200.6	199.9	5.28	69.6	1.74
A2	200.7	200.0	5.23	64.8	1.62
M3	200.4	200.2	5.13	67.8	1.69
M4	200.7	200.0	5.27	74.3	1.85
E5	200.8	200.0	4.79	80.0	1.99
E6	200.5	199.8	4.71	74.7	1.86
mean	**200.6**	**200.0**	**5.07**	**71.9**	**1.79**



2.5 Thickness and compressibility according to EN 12431

DIN EN 12431 2013-05	Thermal insulating products for building applications – Determination of thickness for floating floor insulating products; German version EN 12431:2013

Specimen: 5 samples with dimensions of 200 x 200 mm²

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

Testing device: Universal testing machine TT2850, force sensor 5 kN

Parameter:

d_L: Thickness after 2 minutes under a load of 250 Pa

d_F: Thickness after 2 minutes under a load of 2 kPa

d_B: Thickness after 5 minutes under a load of 2 kPa, after an additional load of 48 kPa was applied for a short time

c: compressibility, difference between d_L and d_B

Procedure: According to DIN EN 12431, the test specimens are exposed to a defined compressive load. The compressibility c [mm] is the difference between the thicknesses before and after the compressive load.

Table 5: Thickness and compressibility

Date of testing: 14/05/2024				
No. [-]	Thickness d_L [mm]	Thickness d_F [mm]	Thickness d_B [mm]	Compressibility c [mm]
1-CP-E	4.74	4.10	3.82	0.92
2-CP-M	5.01	4.19	3.85	1.17
3-CP-A	5.43	4.76	4.37	1.06
4-CP-E	4.73	4.17	3.92	0.80
5-CP-M	5.03	4.31	4.00	1.03
Mean value	**4.99**	**4.31**	**3.99**	**1.00**

2.6 Deformation under specified load and temperature conditions EN 1605

DIN EN 1605 2013-05	Thermal insulating products for building applications - Determination of deformation under specified compressive load and temperature conditions; German version EN 1605:2013

Conditioning:	(23 ± 2) °C and (50 ± 5) % rel. hum. for > 24 hours
Dimensions:	ca. 50 mm x 50 mm x thickness
Test condition:	Test condition 1 according to Table 1, DIN EN 1605 Level A: Compressive load 40 kPa for (48 ± 1) h at (23 ± 5) °C Level B: Compressive load 40 kPa for (168 ± 1) h at (70 ± 1) °C
Testing device:	Determination of length and width with digital calipers Determination the thickness with dial gauge
Procedure:	First, the initial dimensions of the test specimens are determined. Then a compressive load of 40 kPa at 23 °C is applied for 48 h and then the thickness is measured again. This results in the compression ε_1 (test level A). Then the heating chamber is switched on and the test specimens are left under the compressive load of 40 kPa at 70 °C for 168 h (test level B). Then the thickness is measured again. The total compression ε_2 results from the initial thickness and the thickness after test stage B. The relative change in thickness, $\Delta\varepsilon d$, is the difference between ε_1 and ε_2.

Table 6: Deformation under specified compressive load and temperature conditions

Testing period: 25/04/2024 – 04/05/2024						
No.	Dimensions			Compression		Relative
	Length	Width	Thickness	Level A	Level B	change
	l	b	d	ε_1	ε_2	$\Delta\varepsilon d$
[-]	[mm]	[mm]	[mm]	[%]	[%]	[%]
E1-DLT-1	49.0	49.9	3.1	36.1	41.6	5.5
A2-DLT-2	49.4	49.8	3.6	40.0	44.7	4.8
A3-DLT-3	50.1	48.2	3.8	36.4	41.2	4.8
Mean value	**49.5**	**49.3**	**3.5**	**37.5**	**42.5**	**5.0**

3 Summary

The results of the tests carried out at the product "Acoustic Silence 1050 - 5" are summarized in the table below.

Table 7: Summary

Material property	**Test standard**	**Result**
Length l (roll)	EN 822	11865 mm
Width w (roll)	EN 822	998 mm
Thickness d_L	EN 12431	4.99 mm
Compressibility c	EN 12431	1.00 mm
Deviation from squareness S_{max} (roll), max. value	EN 824	13.3 mm/m
Mass per unit area m/A	EN 1602	1.12 kg/m²
Raw density ρ	EN 1602	225.2 kg/m³
Compressive strength σ_{10}	EN 826	1.79 kPa
Deformation at 40 kPa / 70 °C	EN 1605	5.0 %

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, 20 June 2024

Dipl.-Ing. Marko Orgass
Head of Business Division

MFPA Leipzig GmbH
SAC 02
NB 0800

Dr.-Ing. Stephan Reichel
Head of Work Group