

TFI Report 481425-02

Impact Sound Insulation

Customer

Unifloor Underlay Systems
Arnsbergstraat 4
7418 EZ Deventer
NETHERLANDS

Product

floor covering with underlay
Solcora 4mm MFLOR 0,5 toplaag, Bluefloor 2mm nieuw 070

This report includes 2 pages and 1 annex(es)

Responsible at TFI

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Aachen, **23.08.2018**

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- Head of the testing laboratory -

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This report only applies to the tested samples and has been established to the best of our knowledge. Only the entire report shall be reproduced. Under no circumstances, extracts shall be used. Furthermore, we apply the "General Terms and Conditions for the Execution of Contracts" of the TFI Aachen GmbH, also with regard to the order execution.

1 Transaction

Test order	impact sound insulation according to EN ISO 10140
Order date	17 August 2018
Your reference	F. Vousten
Product designation	Solcora 4mm MFLOR 0,5 toplaag, Bluefloor 2mm nieuw 070
TFI sample number	18-08-0172, 18-08-0177

2 Product Specification

Construction

Thickness:*	Material:*	TFI sample number
4 mm	Solcora 4mm MFLOR 0,5 toplaag	18-08-0177
2 mm	Bluefloor 2mm nieuw 070	18-08-0172

* customer information

View



18-08-0177



18-08-0172

3 Results

Impact sound insulation $\Delta L_w = 21 \text{ dB}$ $\Delta L_{in} = 10 \text{ dB}$

4 Annexes

Impact sound insulation TS 481425-02^a

The annexes marked ^a are based on tests accredited in accordance with EN ISO/IEC 17025.

Annex TS - Impact Sound Insulation

1 Transaction

Product designation	Solcora 4mm MFLOR 0,5 toplaag, Bluefloor 2mm nieuw 070
TFI sample number	18-08-0172, 18-08-0177
Testing period	17.08.2017

2 Test Method / Requirements

EN ISO 10140-1:2014	Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for certain products
EN ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 10140-3:2015	Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound reduction
EN ISO 10140-4:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 4: Measurement procedures and requirements
EN ISO 10140-5:2014	Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment
EN ISO 717-1:2013	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation
EN ISO 717-2:2013	Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound reduction
EN ISO 12999-1: 2014	Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 1: Sound insulation

3 Remarks

None

4 Measuring Operation

Measurement of the impact sound pressure level:	Using 4 fixed microphone positions, with 1 tapping machine position for each microphone position (The single results of the one-third-octave-bands were averaged on an energy basis)
Test surface:	~10m ²
Category:	II
Connection with the floor:	loose laid

Damage to the sample: None
 Corrections: None, since
 - background noise corrections not relevant
 - airborne sound corrections not relevant

5 Laboratories

Test rooms: Laboratories of the TFI Aachen GmbH, Hauptstrasse 133, 52477 Alsdorf, Germany
 Sending room (1.04): $V = 52.1 \text{ m}^3$ (with diffusers)
 Receiving room (0.01): $4.05 \text{ m} \times 3.95 \text{ m} \times 3.33 \text{ m} + 2.00 \text{ m} \times 0.98 \text{ m} \times 0.18 \text{ m}$; $V = 53.6 \text{ m}^3$ (cuboid room, with diffusers)
 Reference floor: $4.27 \text{ m} \times 4.46 \text{ m}$; $S = 19.04 \text{ m}^2$
 14 cm concrete slab floor with an area-related mass of $m' \sim 322 \text{ kg/m}^2$
 Flanking walls: Lime sand brick walls with light wall facings (facing shell $d = 12 \text{ cm}$) with an average area-related mass of $m' \sim 330 \text{ kg/m}^2$

6 Measuring Devices

Real time analyser: Norsonic Nor140, SN: 1406926
 Microphone: Norsonic Type 1209/21134
 Tapping machine: NORSONIC, Type 211, SN: 502
 (standard tapping machine with 3 feet and 5 hammers according to ISO 10140)

7 Evaluation

The impact sound pressure level generated by the standard tapping machine is measured in the receiving room under a bare heavy floor with and without a floor covering. The impact sound reduction is determined on the basis of the measured values as follows:

$$\Delta L = L_{n,0} - L_n \text{ (dB)}$$

$L_{n,0}$ Impact sound pressure level without a floor covering (dB)

L_n Impact sound pressure level with a floor covering (dB)

For the evaluation of the weighted reduction in impact sound pressure level ΔL_w , the relevant reference curve is shifted in increments of 1 dB towards the measured curve until the sum of unfavourable deviations is as large as possible, but not more than 32 dB.

The linear impact sound level ΔL_{lin} is determined according to the following equation:

$$\Delta L_{lin} = L_{n,r,0,w} + C_{l,r,0} - (L_{n,r,w} + C_{l,r}) = \Delta L_w + C_{l,\Delta}$$

$L_{n,r,w}$	is the calculated weighted normalized impact sound pressure level of the reference floor with the floor covering under test
$L_{n,r,0,w}$	78 dB, calculated from $L_{n,r,0}$ according to Section 4.3.1 of DIN EN ISO 717-2: 2013
$C_{l,r}$	Spectrum adaptation term for the reference floor with the floor covering to be tested
$C_{l,r,0}$	-11 dB, spectrum adaptation term for the reference floor with $L_{n,r,0}$ determined according to Annex A, Section A.2.1 of DIN EN ISO 717-2:2013

8 Note

The results are based on measurements performed under laboratory conditions with artificial excitation (standard procedure). The test results are applicable in due consideration of the national provisions and the local circumstances and/or constructions.

Impact sound insulation according ISO 10140-1

TS 481425-02

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight reference floor

Annex TS – Impact sound insulation

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TFI sample number: 18-08-0172, 18-08-0177 Testing period: 17.08.2018

Product name: Solcora 4mm MFLOOR 0,5 toplaag, Bluefloor 2mm nieuw 070

Installed by: customer

Construction: Solcora 4mm MFLOOR 0,5 toplaag (18-08-0177)
(from top to bottom) Bluefloor 2mm nieuw 070 (18-08-0172)

Receiving room:

Source room:

Volume: 53,6 m³

Volume: 52,1 m³

Air temperature: 22,3 °C

Air temperature: 22,4 °C

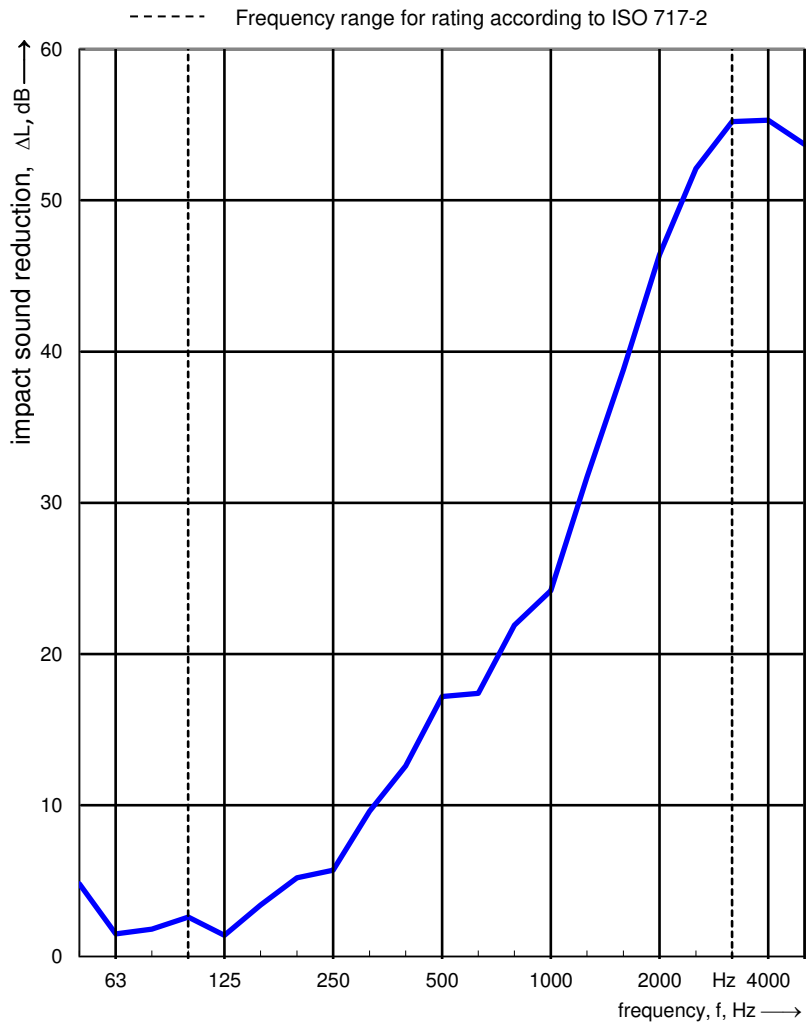
Relative air humidity: 76,5 %

Relative air humidity: 65,1 %

Static pressure: 100,0 kPa

Type of reference floor: Heavyweight

Frequency f [Hz]	L _{n,0} 1/3 oct. [dB]	ΔL 1/3 oct. [dB]
50	62,1	4,8
63	64,2	1,5
80	62,7	1,8
100	59,0	2,6
125	63,6	1,4
160	58,9	3,4
200	64,1	5,2
250	67,9	5,7
315	64,9	9,6
400	64,6	12,6
500	64,7	17,2
630	64,8	17,4
800	66,5	21,9
1000	66,9	24,2
1250	68,2	31,7
1600	67,4	38,8
2000	68,0	46,4
2500	67,6	52,1
3150	68,1	55,2
4000	66,8	55,3
5000	63,3	53,7



Evaluation according to ISO 717-2

ΔL_w = 21 dB

C_{l,Δ} = -11 dB

C_{l,r} = 0 dB

ΔL_{lin} = 10 dB

The results are based on measurements, which were performed under laboratory conditions with artificial excitation (standard procedure).



Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight reference floor

Annex TS – Impact sound insulation

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Evaluation according to ISO 717-2

$$\Delta L_w = 21 \text{ dB}$$

$$C_{i,\Delta} = -11 \text{ dB}$$

$$C_{i,r} = 0 \text{ dB}$$

The results are based on measurements, which were performed under laboratory conditions with artificial excitation (standard procedure).

Weighted normalized impact sound pressure level $L_{n,0,w} = 74 \text{ dB}$ Weighted normalized impact sound pressure level $L_{n,w} = 52 \text{ dB}$ Weighted normalized impact sound pressure level $L_{n,r,w} = 57 \text{ dB}$

Frequency [Hz]	ΔL [dB]	$L_{n,0}$ [dB]	L_n [dB]	$L_{n,r}$ [dB]
50	4,8	62,1	57,3	
63	1,5	64,2	62,7	
80	1,8	62,7	60,9	
100	2,6	59,0	56,4	64,4
125	1,4	63,6	62,2	66,1
160	3,4	58,9	55,5	64,6
200	5,2	64,1	58,9	63,3
250	5,7	67,9	62,2	63,3
315	9,6	64,9	55,3	59,9
400	12,6	64,6	52,0	57,4
500	17,2	64,7	47,5	53,3
630	17,4	64,8	47,4	53,6
800	21,9	66,5	44,6	49,6
1000	24,2	66,9	42,7	47,8
1250	31,7	68,2	36,5	40,3
1600	38,8	67,4	28,6	33,2
2000	46,4	68,0	21,6	25,6
2500	52,1	67,6	15,5	19,9
3150	55,2	68,1	12,9	16,8
4000	55,3	66,8	11,5	
5000	53,7	63,3	9,6	

Receiving room:

Volume: 53,6 m³

Air temperature: 22,3 °C

Relative air humidity: 76,50 %

Static pressure: 100,0 kPa

Senderaum:

Volume: 52,1 m³

Air temperature: 22,4 °C

Relative air humidity: 65,1 %

Type of reference floor: Heavyweight

