

TFI Report 491505-01

Impact Sound Insulation

Customer

ADOPEN PLASTIK VE INSAAT SAN. A.S
Antalya organize sanayi bölgesi 2.kisim Mah. 21.
Cad. No:3
Dösemealti/Antalya
TURKEY

Product

resilient floor covering
ADOFLOOR SPC Vinyl Product 4 mm + 1 mm IXPE

This report includes 2 pages and 1 annex

Responsible at TFI

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Aachen, 10.02.2020

Dr.-Ing. Bayram Aslan



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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	22.11.2019
Your reference	Ismail Baysal
Sampling performed by	Customer
Product designation	ADOFLOOR SPC Vinyl Product 4 mm + 1 mm IXPE
TFI sample number	19-11-0173

2 Product Specification

Construction	heterogeneous
Structure	embossed
Pattern	multicoloured, patterned
Colour of the use surface	grey
View	



Thickness of wear layer [mm]	0,55*
Thickness of underlayment [mm]	1,00*
Thickness [mm]	5,55*
Area density [g/m ²]	7587*
Type of delivery	modules
	*customer information

3 Results

Impact sound insulation	$\Delta L_w = 19$ dB
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4 Annexes

Impact sound insulation	TS 491505-01 ^a
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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	ADOFLOOR SPC Vinyl Product 4 mm + 1 mm IXPE
TFI sample number	19-11-0173
Testing period	30.01.2020

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

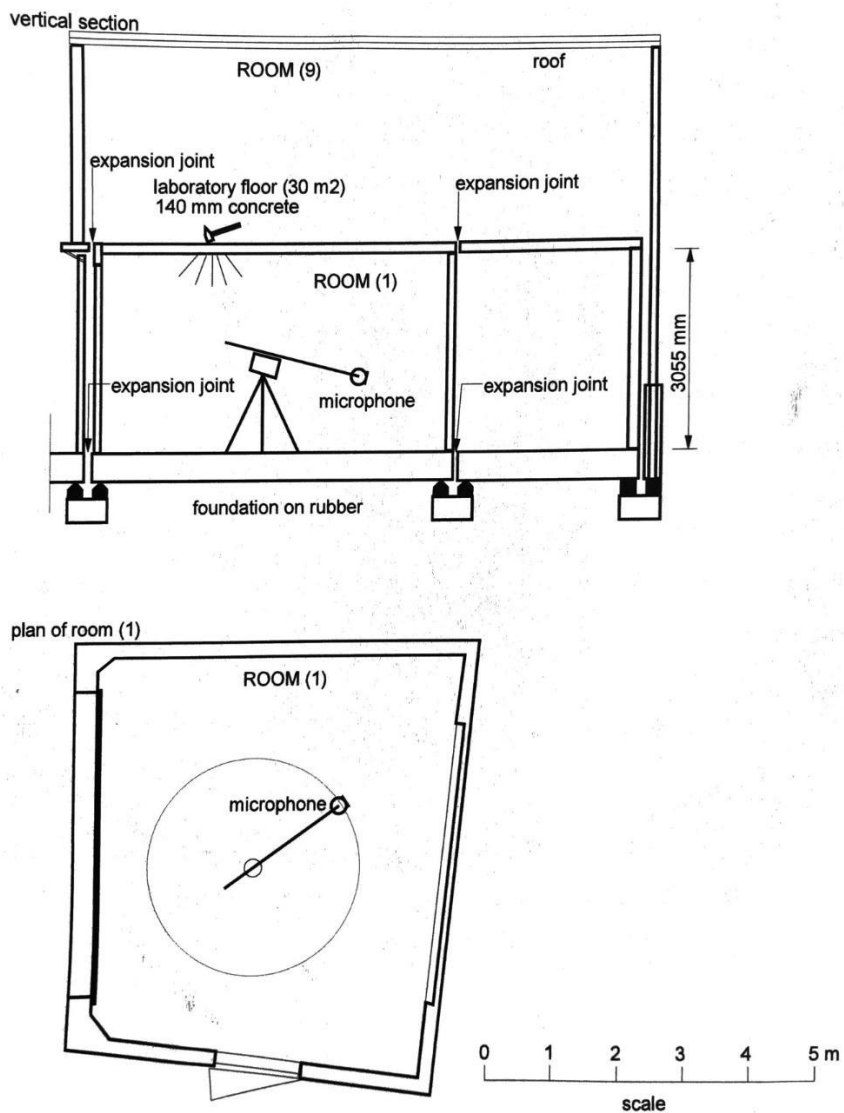
- The test was performed by a subcontractor accredited according to EN ISO/IEC 17025.

4 Measuring Operation

Impact sound pressure level:	continuous measurement via a rotating microphone arm, with 6 different tapping machine positions
Test surface:	10 m ²
Category:	II
Connection with the floor:	loose laid
Damage to the sample:	None
airborne sound correction	not relevant

5 Laboratories

- Test rooms: PEUTZ bv, Lindenlaan 41, 6584 AC Molenhoek (LB), The Netherlands
- Sending room (9): cuboid room with high sound absorption
- Receiving room (1): trapezoidal room $V = 94 \text{ m}^3$
- Reference floor: $S = 30 \text{ m}^2$
 14 cm concrete slab floor with an area-related mass of $m' \sim 325 \text{ kg/m}^2$
- 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 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

7 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 491505-01

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: 19-11-0173 Testing period: 30.01.2020
 Product name: ADOFLOOR SPC Vinyl Product 4 mm + 1 mm IXPE

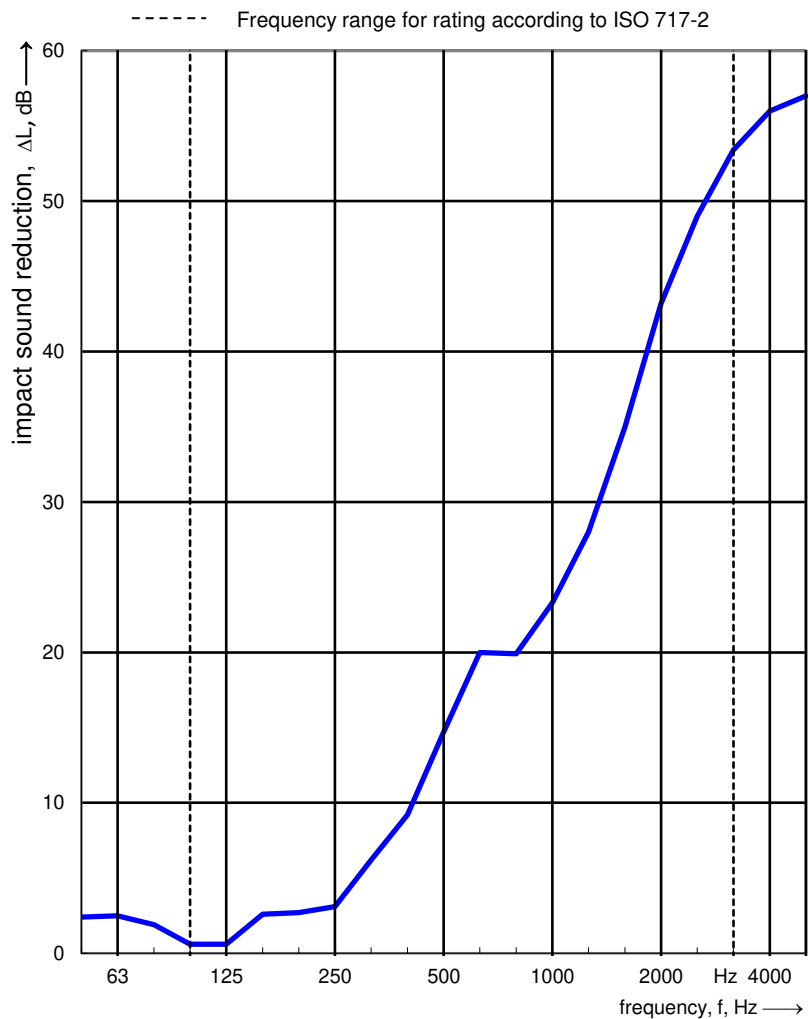
Installed by: TFI Aachen GmbH

Construction:
 (from top to bottom)

Receiving room:

Volume: 94,0 m³
 Air temperature: 18,7 °C
 Relative air humidity: 49,0 %

Frequency f [Hz]	L _{n,0} 1/3 oct. [dB]	ΔL 1/3 oct. [dB]
50	55,8	2,4
63	65,2	2,5
80	63,5	1,9
100	62,2	0,6
125	68,5	0,6
160	68,6	2,6
200	69,7	2,7
250	70,4	3,1
315	71,7	6,2
400	71,7	9,2
500	72,9	14,7
630	73,2	20,0
800	74,0	19,9
1000	73,9	23,3
1250	74,5	28,0
1600	74,2	35,0
2000	75,9	43,2
2500	76,7	49,0
3150	76,0	53,4
4000	73,7	56,0
5000	70,9	57,0



Evaluation according to ISO 717-2

ΔL_w = 19 dB

C_{i,Δ} = -12 dB

C_{i,r} = 1 dB

ΔL_{jin} = 8 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

 $\Delta L_w = 19 \text{ dB}$ $C_{i,\Delta} = -12 \text{ dB}$ $C_{i,r} = 1 \text{ dB}$

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

Weighted normalized impact sound pressure level $L_{n,0,w} = 82 \text{ dB}$ Weighted normalized impact sound pressure level $L_{n,w} = 59 \text{ dB}$

Frequency [Hz]	ΔL [dB]	$L_{n,0}$ [dB]	L_n [dB]
50	2,4	55,8	53,4
63	2,5	65,2	62,7
80	1,9	63,5	61,6
100	0,6	62,2	61,6
125	0,6	68,5	67,9
160	2,6	68,6	66,0
200	2,7	69,7	67,0
250	3,1	70,4	67,3
315	6,2	71,7	65,5
400	9,2	71,7	62,5
500	14,7	72,9	58,2
630	20,0	73,2	53,2
800	19,9	74,0	54,1
1000	23,3	73,9	50,6
1250	28,0	74,5	46,5
1600	35,0	74,2	39,2
2000	43,2	75,9	32,7
2500	49,0	76,7	27,7
3150	53,4	76,0	22,6
4000	56,0	73,7	17,7
5000	57,0	70,9	13,9

Receiving room:

Volume: 94,0 m³

Air temperature: 18,7 °C

Relative air humidity: 49,0 %

Type of reference floor: Heavyweight

