

TFI Report 452039-14

Impact Sound Insulation

Customer

LG Hausys Ltd.
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SOUTH KOREA

Product

resilient floor covering
Medistep Allroad

Responsible at TFI

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This report includes 2 pages and 1 annex(es)

This report is a transcription of test report no. 452039-01.

Aachen, 14.01.2016



Dr. Ernst Schröder

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1 Transaction

Test order	sound insulation according to EN ISO 10140
Order date	18.11.2015
Your reference	Dan Bi
Product designation	Medistep Allroad
TFI sample number	15-11-0188

2 Product Specification

Use surface	PVC*
Construction	homogeneous
Structure	flat
Pattern	tonal effect without pattern
Colour of the use surface	beige, light beige
View	



Thickness [mm]	2.0*
Area density [g/m²]	2950*
Type of delivery	broadloom
	*customer information

3 Results

Impact sound insulation	$\Delta L_w = 2 \text{ dB}$
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4 Annexes

Impact sound insulation	TS 452039-14 ^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	Medistep Allroad
TFI sample number	15-11-0188
Testing period	08.12.2015

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 10140-3:2010	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 3 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)
Measurement of the reverberation time:	Using 5 fixed microphone positions, with 2 loudspeaker positions for each microphone position (The single results of the one-third-octave-bands were averaged arithmetically)
Corrections:	None, since - background noise corrections not relevant - airborne sound corrections not relevant

5 Laboratories

Test rooms:	Laboratories of the Textiles & Flooring GmbH, Hauptstr. 133, 52477 Alsdorf, Germany
Sending room (1.04):	4.29 m x 4.51 m x 2.76 m; V = 53.40 m ³ (with diffusers)
Receiving room (0.01):	4.29 m x 4.51 m x 3.05 m; V = 59.01 m ³ (with diffusers)
Reference floor:	4.29 m x 4.51 m; S = 19.35 m ² 14 cm concrete slab floor with an area-related mass of m' ≈ 322 kg/m ²
Flanking walls:	Lime sand brick walls without light wall facings with an average area-related mass of m' ≈ 330 kg/m ²

6 Measuring Devices

Real time analyser:	CESVA INSTRUMENTS, TYPE: SC310, SN: T234359
Microphone:	CESVA INSTRUMENTS, TYPE: C130, SN: 11861
Microphone amplifier:	CESVA INSTRUMENTS, TYPE: PA13, SN: 49649
Calibrator:	CESVA INSTRUMENTS, TYPE: CB006, SN 49649
Loudspeaker:	Dodecahedron (self-construction)
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:

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

where

	$L_{n,r,w}$ 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
$C_{i,r}$	Spectrum adaptation term for the reference floor with the floor covering to be tested
$C_{i,r,0}$	-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

Measurement of impact sound insulation by a floor covering on a solid concrete floor

Product name Medistep Allroad

TFI sample number 15-11-0188

Construction Medistep Allroad
(from top to bottom)

Category I according to ISO 10140

Installation loose laid

Setting time -

Installed by laboratory

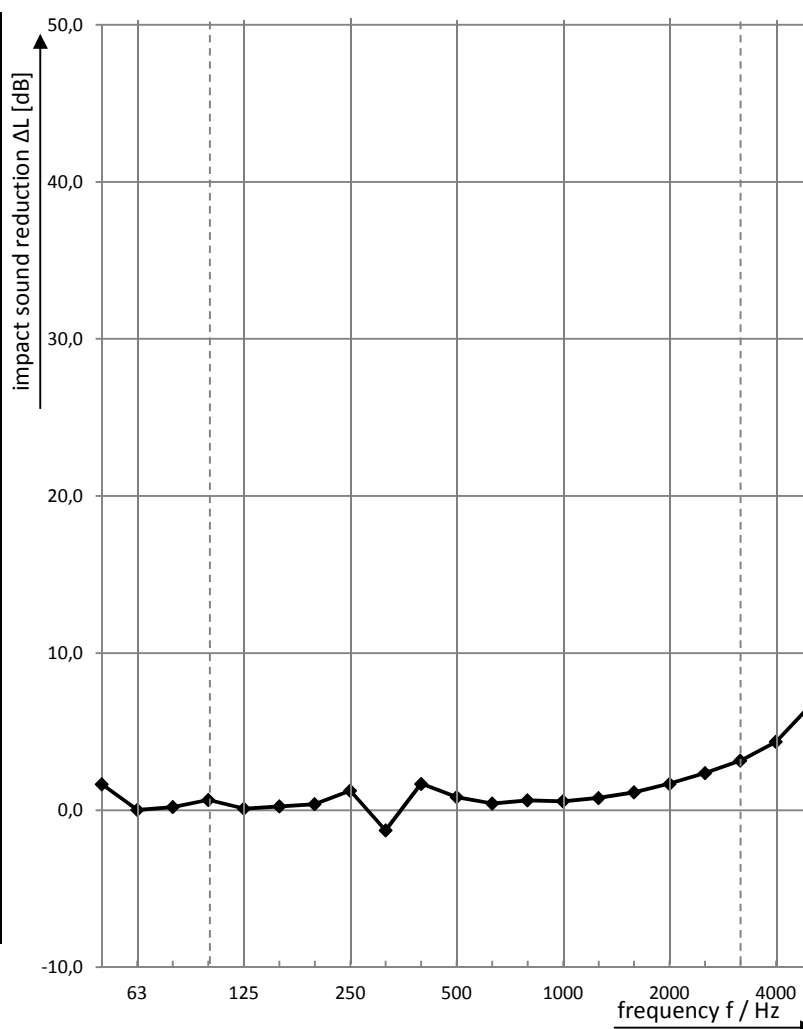
Reference floor solid concrete floor

Note -

	Θ [°C]	r.h. [%]
in the source room	20	44,9

Testing period 08.12.2015

Frequency f [Hz]	$L_{n,0}$ third-octave [dB]	ΔL third-octave [dB]
50	56,5	1,6
63	62,7	0,0
80	57,4	0,2
100	57,2	0,6
125	67,5	0,1
160	62,6	0,2
200	64,1	0,4
250	67,1	1,2
315	65,3	-1,3
400	64,7	1,7
500	65	0,8
630	65,3	0,4
800	66,4	0,6
1000	67,8	0,6
1250	67,7	0,8
1600	68,2	1,1
2000	68,8	1,7
2500	68,6	2,4
3150	67,9	3,1
4000	66,9	
5000	64,4	



*Airborne noise correction for the measured value

Evaluation according to ISO 717-2

$\Delta L_w = 2 \text{ dB}$

$\Delta L_{lin} = 1 \text{ dB}$

$C_{l,\Delta} = -1 \text{ dB}$

$C_{l,r} = -10 \text{ dB}$

$C_{l,r,50-2500} = -9 \text{ dB}$

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



Textiles & Flooring Institute GmbH