Schall- und Wärmemessstelle Aachen GmbH

Schallschutzprüfstelle VPMA · Zertifiziert Güteprüfungen · Eignungsprüfungen · ABP

Staatlich anerkannte Sachverständige für den Schallschutz und Wärmeschutz · IK-Bau NRW

Blower Door Messungen · Gebäudethermografie · Energieberatung · EnEV-Nachweise Wohngebäude · EnEV-Nachweise Nicht-Wohngebäude

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Steuer-Nr. 201/5992/3795
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Aachen, 26.08.2015

Test report No.: 1412/235

Reduction of impact sound pressure according to ISO 10140-3 : 2010-12

Test stand measurements to determine the reduction of impact sound pressure with floor coverings on a solid ceiling.

Product name:

Renotop Plus

Applicant:

Uzin Utz AG
Dieselstraße 3
89079 Ulm

Number of pages:

5 pages and 2 supplement

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1 Test

Reduction of impact sound pressure according to ISO 10140-3 : 2010-12

Test stand measurements to determine the reduction of impact sound pressure with floor coverings on a solid ceiling

1.1 Product name

Renotop Plus (2 x 4mm MDF + 2mm PE-Foam)

1.2 Test object, category and assembly

Sample taking by: applicant
Installed through: employees of SWA GmbH

	Test object / Floor covering	Category according to ISO 10140
	resilient floor covering	I
	textile floor covering	
X	solid floor covering on an impact sound insulation / separating layer	II
	screed on an impact sound insulation / separating layer	

	Installation type
X	loose laid
	glued

1.3 Test assembly (from top to bottom)

Thickness:	Material:	Area-related mass
10 mm [3]	Renotop Plus	-

Area-related mass of example: -

Total thickness of example: --

[2] area-related mass determined by employees of SWA GmbH
[3] information of applicant

1.4 Measurement execution

Measurement of impact sound level:	with 4 fixed microphone positions by 2 tapping machine positions each (The third octave single results were energetically averaged)
Reverberation period measurement:	with 4 fixed microphone positions by 2 loud speaker positions each (The third octave single results were energetically averaged)

Corrections: not any
- background noise corrections irrelevant
- airborne noise corrections irrelevant

1.5 Annotations

- Damages caused by tapping machine influences could not be determined on the example.

1.6 Test stand description

Test rooms:	Laboratory of SWA GmbH
Sending room:	4,29 m x 4,51 m x 2,76 m; V = 53,40 m³ (with diffusers)
Receiving room:	4,29 m x 4,51 m x 3,05 m; V = 59,01 m³ (with diffusers)
Reference ceiling:	4,29 m x 4,51 m; S = 19,35 m² 14 cm concrete solid plate ceiling with an area-related mass m‘ ≈ 322 kg/m²
Flanking walls:	lime sand brick walls without light weighting facing shells with a medium area-related mass of m‘ ≈ 330 kg/m²

1.7 Measuring systems

Real time analyzer:	CESVA INSTRUMENTS, TYP: SC310, SN: T234359*
Microphone:	CESVA INSTRUMENTS, TYP: C130, SN: 11861*
Microphone amplifier:	CESVA INSTRUMENTS, TYP: PA13, SN: 49649*
Calibrating device:	CESVA INSTRUMENTS, TYP: CB006, SN 49649*
Loudspeaker:	Dodecahedron, CESVA INSTRUMENTS*
Tapping machine:	NORSONIC, type 211, SN: 502* (tapping machine with 3 feeds and 5 hammers according to ISO 10140)

*) last examination by PTB (Physikalisch-Technische Bundesanstalt, Brunswick, Germany) in Feb. 2013

2 Analysis

The impact sound levels generated by the standardized tapping machine are measured in the receiving room under a solid ceiling without and with a textile floor covering. From the measured values the reduction of impact sound pressure is calculated as follows:

ΔL = $L_{n,0}$ - L_n in dB

$L_{n,0}$ = Impact sound level without floor covering in dB

L_n = Impact sound level with floor covering in dB

To determine the weighted impact sound reduction the applicable reference curve is shifted in 1 dB steps into the mess curve so that the sum of the most unfavorable deviations correspondents as close as possible to the value of 32 dB without exceeding this value.

The linear impact sound level ΔL_{lin} of importance and you can calculate after the following equation:

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

$L_{n,r,w}$ the calculated weighted norm impact sound level of the cover blanket with the blanket edition to be checked is.
$L_{n,r,0,w}$ 78 dB, investigates$L_{n,r,0}$ to 4.3.1 DIN EN ISO 717-2 : 2013.
$C_{I,r}$ Spectrum customization value.
$C_{I,r,0}$ Spectrum customization value.

2.1 Applied standards

Standard: (Issue)*	Title
DIN EN ISO 10140-1:2010-12	Akustik – Messung der Schalldämmung von Bauteilen im Prüfstand – Teil 1: Anwendungsregeln für bestimmte Produkte
DIN EN ISO 10140-2 :2010-12	Akustik – Messung der Schalldämmung von Bauteilen im Prüfstand – Teil 2: Messung der Luftschalldämmung
DIN EN ISO 10140-3:2010-12	Akustik – Messung der Schalldämmung von Bauteilen im Prüfstand – Teil 3: Messung der Trittschalldämmung
DIN EN ISO 10140-4:2010-12	Akustik – Messung der Schalldämmung von Bauteilen im Prüfstand – Teil 4: Messverfahren und Anforderungen
DIN EN ISO 10140-5:2010-12	Akustik – Messung der Schalldämmung von Bauteilen im Prüfstand – Teil 5: Anforderungen an Prüfstände und Prüfeinrichtungen
DIN EN ISO 717-1:2013-06	Akustik – Bewertung der Schalldämmung in Gebäuden und von Bauteilen – Teil 1: Luftschalldämmung
DIN EN ISO 717-2:2013-06	Akustik – Bewertung der Schalldämmung in Gebäuden und von Bauteilen – Teil 2: Trittschalldämmung

* German issue.

3 Test Results

3.1 Reference floor

Weighted standard impact sound level of the reference floor: $L_{n,0,w}$: 74 dB
$C_{I,0}$: -11 dB

3.2 Floor covering (standard test according to ISO 10140)

ΔL_w = 19 dB **ΔL_{lin} = 8 dB**

$C_{I,\Delta}$ = -11 dB $C_{I,r}$ = 0 dB $C_{I,r,50\text{-}2500}$ = 1 dB

3.3 Floor covering (weighed down with ca. 23 kg/m², according to the TÜV Rheinland regulations/2014EV)

ΔL_w = 19 dB **ΔL_{lin} = 8 dB**

$C_{I,\Delta}$ = -11 dB $C_{I,r}$ = 0 dB $C_{I,r,50\text{-}2500}$ = 2 dB

The results are based on tests, which were effected with on artifical source of sound under laboratory conditions. (standard procedure); compare measuring results in supplement 1 of this report.

(Dr.-Ing. A. Siebel)

Test results Supplement 1

Measurement of impact sound insulation according to ISO 10140-3 : 2010-12

Laboratory measurement of sound insulation of building elements.

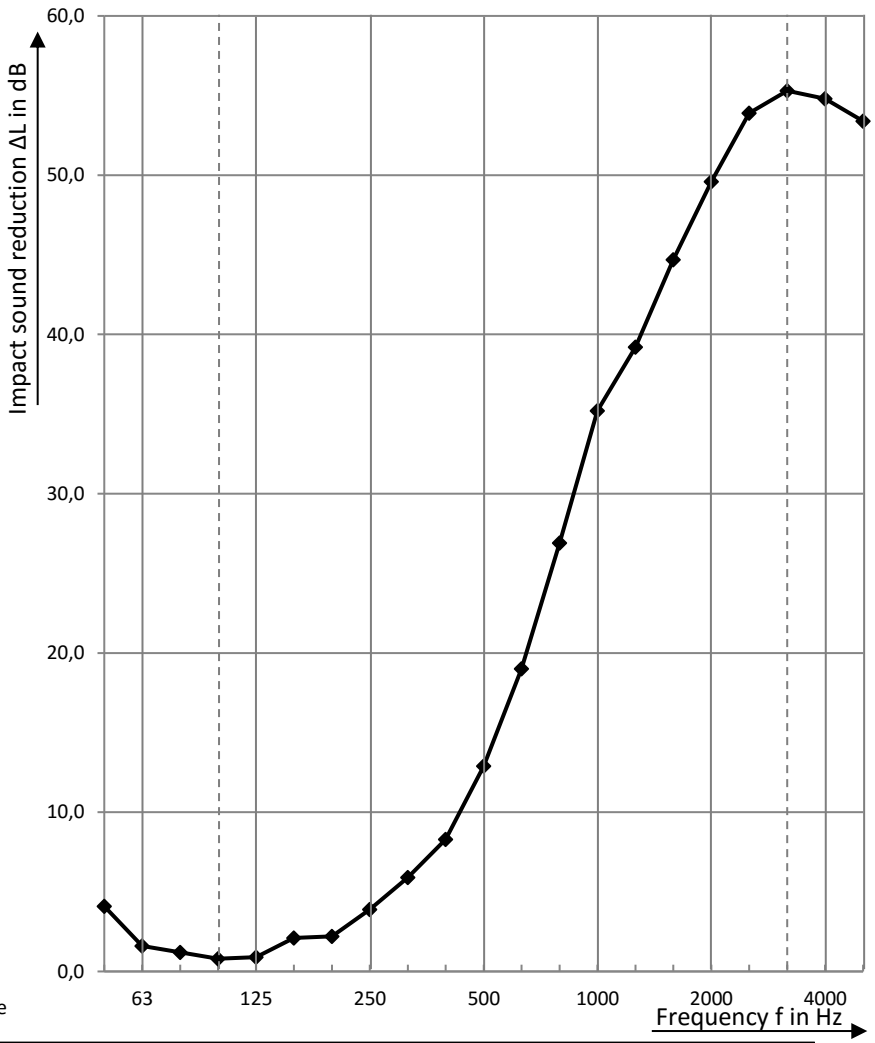
Product name:	**Renotop Plus**		
Category:	II	according to ISO 10140, see annotation	
Construktion:	10 mm	Renotop Plus	-
(from top to bottom)			

Reference floor: solid concrete floor
installed by: applicant

Date of test: 03.09.2014
annotations:

climate **in the source room**
air temperature: 20 °C
humidity: 53%

Frequency f [Hz]	$L_{n,0}$ third-octave [dB]	ΔL third-octave [dB]
50	56,5	4,1
63	62,7	1,6
80	57,4	1,2
100	57,2	0,8
125	67,5	0,9
160	62,6	2,1
200	64,1	2,2
250	67,1	3,9
315	65,3	5,9
400	64,7	8,3
500	65	12,9
630	65,3	19,0
800	66,4	26,9
1000	67,8	35,2
1250	67,7	39,2
1600	68,2	44,7
2000	68,8	49,6
2500	68,6	53,9
3150	67,9	55,3
4000	66,9	54,8
5000	64,4	53,4



*Airborne noise correction for the measured value

Calculation according to ISO 717-2:2013-06

ΔL_w = **19 dB** ΔL_{in} = **8 dB**

$C_{I,\Delta}$ = **-11 dB** $C_{I,r}$ = **0 dB** $C_{I,r,50\text{-}2500}$ = **1 dB**

The results are based on tests, which were effected with on artifical source of sound under laboratory conditions. (standard procedure)

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(Dr.-Ing. A. Siebel)

Test results Supplement 2

Measurement of impact sound insulation according to ISO 10140-3 : 2010-12

Laboratory measurement of sound insulation of building elements.

Product name: **Renotop Plus**

Category: II according to ISO 10140, see annotation

Construktion: 10 mm Renotop Plus -

(from top to bottom)

Reference floor: solid concrete floor
installed by: applicant

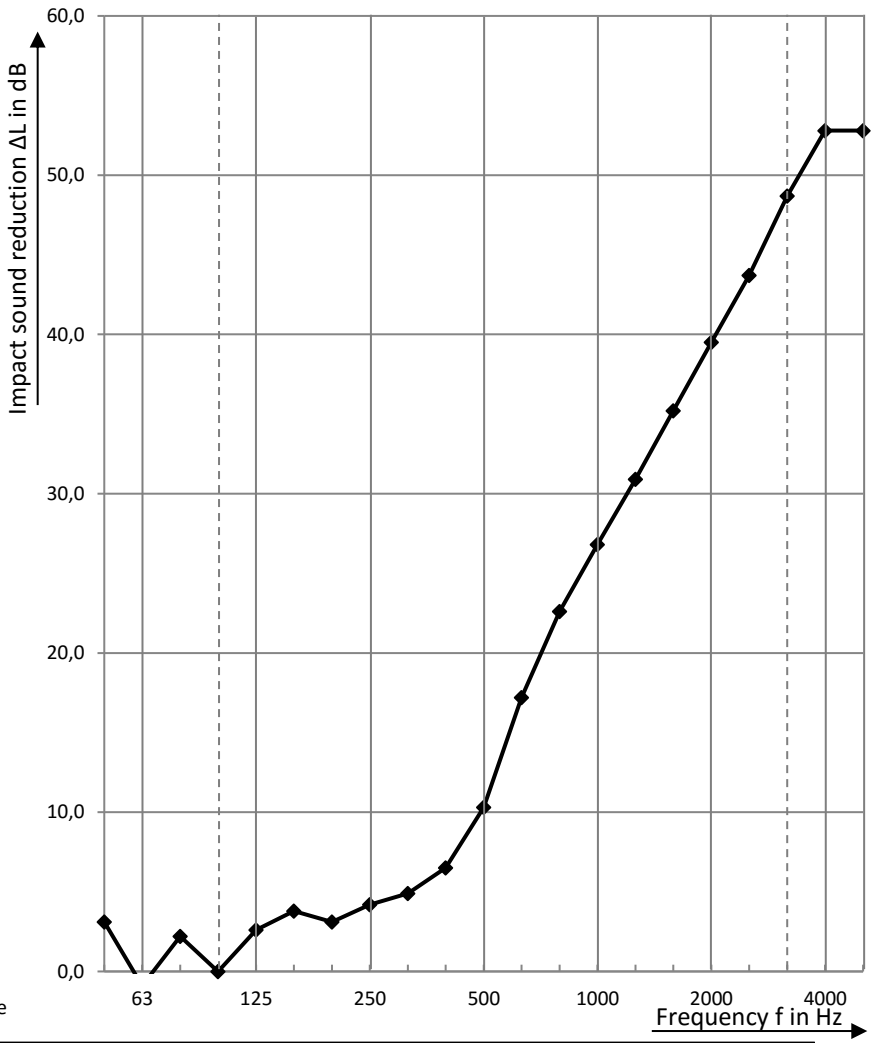
Date of test: 03.09.2014
annotations: weighed down with ca. 23 kg/m², according to the TÜV Rheinland regulations/2014EV

climate **in the source room**

air temperature: 20 °C

humidity: 53%

Frequency f [Hz]	$L_{n,0}$ third-octave [dB]	**ΔL** third-octave [dB]
50	56,5	3,1
63	62,7	-0,9
80	57,4	2,2
100	57,2	0,0
125	67,5	2,6
160	62,6	3,8
200	64,1	3,1
250	67,1	4,2
315	65,3	4,9
400	64,7	6,5
500	65	10,3
630	65,3	17,2
800	66,4	22,6
1000	67,8	26,8
1250	67,7	30,9
1600	68,2	35,2
2000	68,8	39,5
2500	68,6	43,7
3150	67,9	48,7
4000	66,9	52,8
5000	64,4	52,8



*Airborne noise correction for the measured value

Calculation according to ISO 717-2:2013-06

ΔL_w = **19 dB** ΔL_{in} = **8 dB**

$C_{I,\Delta}$ = **-11 dB** $C_{I,r}$ = **0 dB** $C_{I,r,50\text{-}2500}$ = **2 dB**

The results are based on tests, which were effected with on artifical source of sound under laboratory conditions. (standard procedure)

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