Instytut Techniki Budowlanej

00-611 Warszawa, ul. Filtrowa 1, tel. 22 8250471, fax. 22 8255286

Test report of improvement of impact sound insulation by underlay for laminate floor covering XPS 3 mm

Nr pracy: 06087/15/R03NA (LA01-6087/15/R03NA)

Warszawa, Lipiec 2015 r.

DEPARTMENT OF ACOUSTICS
ACOUSTICS LABORATORY

TEST REPORT № LA01 - 6087/15/R03NA

Client:	**Decora S.A.**
Client address:	**24a Prądzyńskiego str., 63-000 Środa Wielkopolska**
	Information concerning test item
Test object:	***Underlay for laminate floor covering XPS 3 mm***
Date of receipt / sampling:	*16-07-2015*
№ of receipt /sampling protocol:	*LA00-6087/15/R03NA*
Receipt /sampling procedure:	*Procedure of ZLB management no. 18*
	Information concerning tests
Test commencement date:	*16-07-2015*
Test completion date:	*28-07-2015*
Test procedure:	Measurement of impact sound improvement carried out acc. to standard **PN-EN ISO 10140-3:2011**

DESCRIPTION OF TEST OBJECT:

The test object was 3 mm thick XPS underlay for laminate floor covering, manufactured by DECORA S.A. 24a Prądzyńskiego str, 63-000 Środa Wielkopolska, POLAND.

The measurement was carried out on a reference floor sized 265 cm x 435 cm with a floating floor (polyethylene foam 3 mm + screed 40 mm), on which the XPS underlay of 3 mm thickness and 32 kg/m^3 density, as well as laminate tiles of 7 mm thickness, were installed.

TEST RESULTS:

Measured value		**Meas. result**		
Improvement of impact sound insulation of a reference floor after installation of floor covering		ΔLw dB	ΔL_{lin} dB	page
Sample description	**Meas. No.**			
Underlay XPS under a Kronopol laminate floor covering (7 mm), on a reference floor with a floating floor. Floor underlay parameters: – thickness: 3 mm, – density: 32 kg/m^3. Sample no. 1/ LA01-6087/15/R03NA	572.15 / 451.15	**22**	**10**	**3**

Single number index and its uncertainty U_{95} determined in accordance with PN-EN ISO 12999-1:2014:$\Delta L_{n,w}$ = 22 dB ± 1,1 dB

END OF PAGE 2

Reduction of impact sound pressure level according to PN-EN ISO 10140-3:2011

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

Client: **Decora S.A.**
ul. Prądzyńskiego 24 A, 63-000 Środa Wlkp.

Test specimen mounted by: **NA ITB**

Description of test facility, test specimen and test arrangement:

Underlay XPS under a Kronopol laminate floor covering (7 mm), on a reference floor with a floating floor.

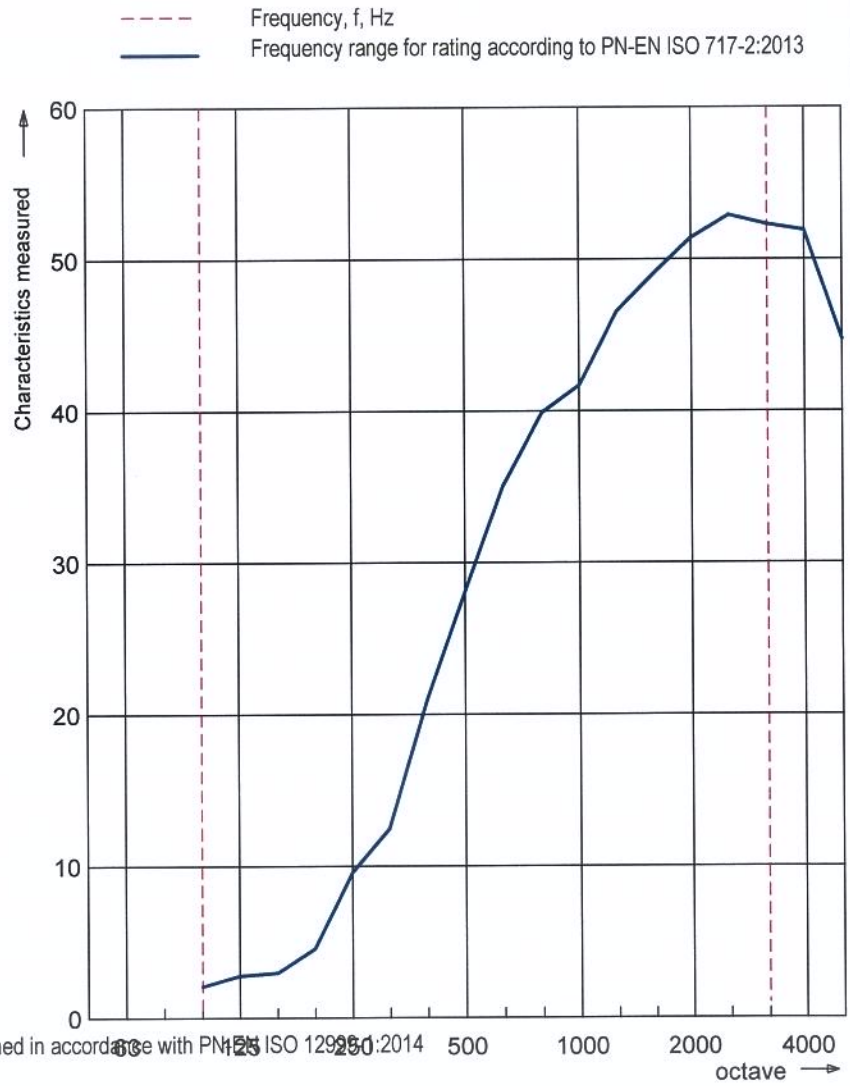
Floor underlay parameters:
- thickness: 3 mm,
- density: 32 kg/m^3.

Sample no. 1/LA01-6087/15/R03NA

Mass per unit area: --.- kg/m^2

Test room:	source	receive
Volume, m^3:	79.0	64.0
Air temperature, °C:	--.-	20.9
Air humidity, %:	--.-	62.4

f [Hz]	Frequency 1/3 |D|L [dB]	L_{n0} 1/3 |D|L [dB]	$L_{n,r}$ 1/3 |D|L [dB]
50	---.-	---.-	---.-
63	---.-	---.-	---.-
80	---.-	---.-	---.-
100	59.6	57.5	2.1
125	59.6	56.8	2.8
160	65.0	62.0	3.0
200	69.4	64.8	4.6
250	69.1	59.5	9.6
315	64.8	52.3	12.5
400	66.1	45.2	20.9
500	67.4	39.3	28.1
630	68.2	33.1	35.1
800	70.4	30.5	39.9
1000	70.0	28.3	41.7
1250	70.6	24.0	46.6
1600	71.6	22.5	49.1
2000	72.3	20.9	51.4
2500	73.8	20.9	52.9
3150	73.9	21.6	52.3
4000	73.4	21.5	51.9
5000	72.7	28.0	44.7



Single number index and its uncertainty U#95# determined in accordance with PN-EN ISO 12999-1:2014
0.8
0.1 dB

Rating according to PN-EN ISO 717-2:2013

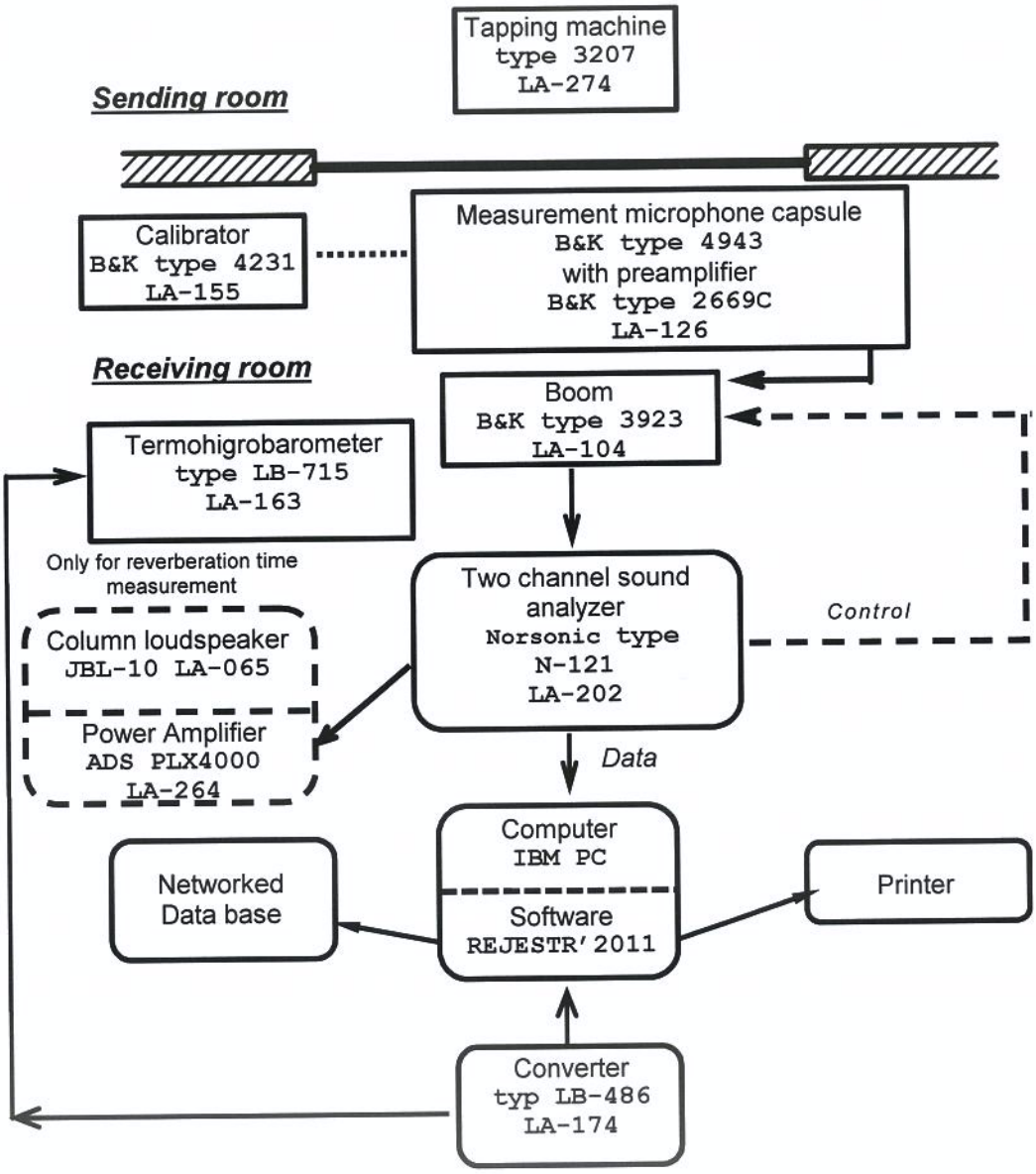
ΔL_w = 22 dB $C_{I,\Delta}$ = -12 dB $L_{n,w,o}(C_{I,o})$ = 79 (-12) dB $L_{n,w,r}(C_{I,r})$ = 52 (1) dB

These results are based on test made with an artificial source under laboratory conditions (engineering method).

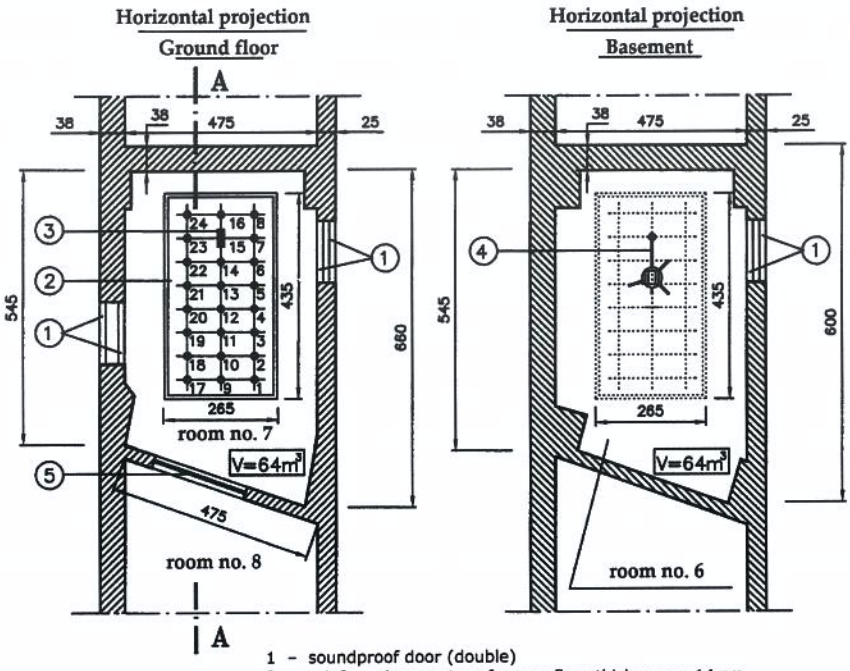
Building Research Institute Group of the Testing Laboratories
Acoustic Laboratory

Test No.: 572.15 / 451.15	Date of analysis: 2015-07-28	Signature: Marcin Marzec

MEASUREMENT SYSTEM FOR IMPACT SOUND INSULATION ON MASSIVE REFERENCE FLOOR IN LABOLATORY CONDITIONS

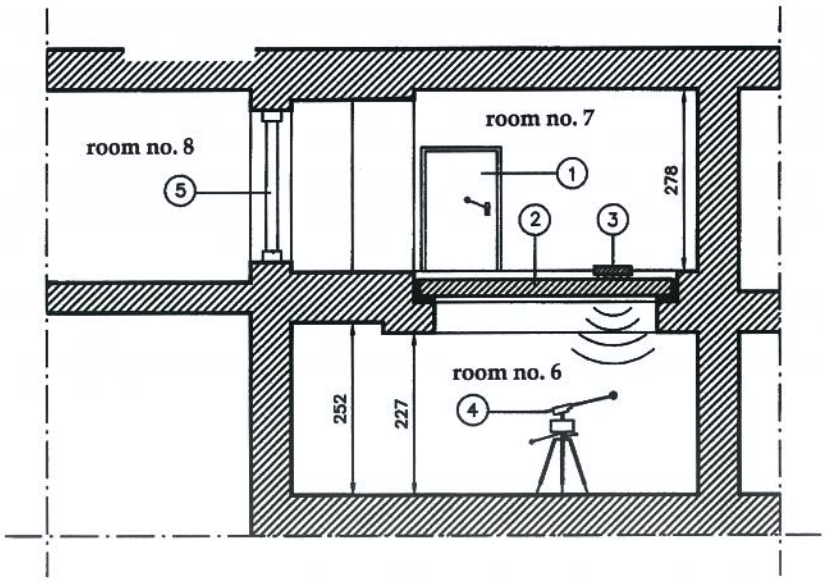


LABORATORY TEST ROOMS FOR IMPACT SOUND INSULATION MEASUREMENTS



1 – soundproof door (double)
2 – reinforced concrete reference floor thickness = 14 cm
3 – tapping machine
4 – rotating microphone boom
5 – opening for test sample installation

Profile A – A



1 – soundproof door (double)
2 – reinforced concrete reference floor thickness = 14 cm
3 – tapping machine
4 – rotating microphone boom
5 – opening for test sample installation

ADDITIONAL INFORMATION CONCERNING TEST PROCEDURE:

Method for testing of acoustic insulation:

The sound source (standard tapping machine) is placed in 5 positions in the source room, in accordance with the standard's requirements. Average sound pressure level in 1/3 octave bands is measured in the receiving room with a continuously moving microphone. Average sound pressure level in the receiving room is obtained by integrating in (over?) time and space.

Reverberation time T is measured in the receiving room and allows for the calculation of the correction factor in the equation for the normalized impact sound pressure level L_n (Sabine's formula: A=0.16V/T, V – receiving room volume). Normalized impact sound pressure level is calculated using the following equation:

$$L_n = L_i + 10\log\frac{A}{A_0} \text{ [dB]}$$

L_i – average sound pressure level in one-third octave bands in the receiving room [dB] (reference pressure 20μPa),

A – equivalent sound absorption area in the receiving room in m^2 (calculated from Sabine's formula),

A_0 – reference equivalent sound absorption area in m^2 (A_0 = 10 m^2).

Measurement of impact sound reduction was made on massive, reinforced concrete reference floor with thickness of 140 mm. Samples were installed on the test floor without being glued to the surface. Diagram of system used to measure air-borne sound insulation is shown on page no. 4.

Single-number quantities: ΔL_w, $C_{I,\Delta}$ and $\Delta L_{lin} = \Delta L_w + C_{I,\Delta}$ were calculated in accordance with standard EN ISO 717-2:2013.

Prior to measurements, routine calibration/inspection of the measuring system was carried out in accordance with the Instruction № 1 entitled "Routine Calibration/Inspection of the Acoustic Measuring System".

Person in charge of the test:	Person authorizing the report:
Hanna Turkowska, MSc.	Elżbieta Nowicka, Ph.D.,Eng.
.....	.....
Signature	Signature

30th July 2015, Warsaw

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