TEST REPORT

for

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Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors Test

ASTM E 2179 – 03 (2016)

On

6 Inch (152 mm) Concrete Slab Floor- Ceiling Assembly Overlaid with 2 mm Vinyl Plank Flooring over Sound Step Luxury Vinyl Underlayment

Report Number: NGC 7018147

Assignment Number: G-1565

Test Date: 11/01/2018

Report Approval Date: 11/12/2018

Submitted by: _____
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Reviewed by: _____
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Director

The results reported above apply to specific samples submitted for measurement. No responsibility is assumed for performance of any other specimen. The laboratory's accreditation or any of its test reports in no way constitute or imply product certification, approval, or endorsement by NVLAP, NIST or any agency of the Federal Government. This report may not be reproduced except in full, without written approval of the laboratory.

Revision Summary:

Date	SUMMARY
Approval Date: 11/12/2018	Original issue date: 11/12/2018 Original NGCTS report #: NGC 7018147

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Test Method: This test method is in accordance with American Society for Testing and Materials Standard Test Method for Laboratory Measurement of Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors – Designation: E 2179 – 03 (2016)

A 30 second averaging time was used for measurement of sound pressure levels.

Specimen Description: 6 inch concrete slab floor ceiling assembly overlaid with, according to client, 2 mm Vinyl Plank Flooring and Sound Step Luxury Vinyl Underlayment.

The test specimen was a floor assembly and was observed to consist of the following:
All weights and dimension are averaged:

- 1 layer of, according to client, 2 mm Vinyl Plank Flooring. The flooring was adhered to the Sound Step Luxury Vinyl Underlayment using Pressure Sensitive Adhesive. The adhesive was applied using a 0.06 mm x 0.03 mm x 0.03 mm (1/16 in. x 1/32 in. x 1/32 in.) U- notch trowel. The measured thickness of the flooring was 2.03 mm (0.08 in.), Measured weight of 3.52 kg/m^2 (0.72 PSF).
- 1 layer of, Sound Step Luxury Vinyl Underlayment. The underlayment was adhered to the concrete slab using Pressure Sensitive Adhesive. The adhesive was applied using a 0.06 mm x 0.03 mm x 0.03 mm (1/16 in. x 1/32 in. x 1/32 in.) U- notch trowel. The measured thickness of the underlayment was 1.02 mm (0.04 in.), the measured weight was 0.10 kg/m^2 (0.02 PSF).
- 152.4 mm (6 in.) thick reinforced concrete slab, weighing: 366.2 kg/m^2 (75.00 PSF)

The overall weight of the test assembly is: 369.765 kg/m^2 (75.74 PSF)

The perimeter of the test frame was sealed with a rubber gasket and a sand filled trough.

The test frame was structurally isolated from the receiving room.

Specimen size: 3657.6 mm x 4876.8 mm (12 ft. x 16 ft.)

Conditioning: Concrete slab cured for a minimum of 28 days.

Test Results: The results of the tests are given on pages 4 through 7 of the report.

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Test: ASTM E 2179 - 03 (2016) Bare 6" Concrete Slab

Test Report: NGC7018147 Date: 11/1/2018
Specimen Size [m²]: 17.8

Source room
Rm Temp [°C]: 21
Humidity [%]: 55

Receiving room
Volume [m³]: 128
Rm Temp [°C]: 18
Humidity [%]: 63

Frequency [Hz]	L_n [dB]	L2 [dB]	d [dB/s]	Corr. [dB]	u.Dev. [dB]	ΔL_n
50	65	67.9	15.01	-5.7		3.8
63	61	64.0	14.71	-3.9		4.2
80	60	59.6	29.40	0.4		1.90
100	60	60.6	23.74	-0.6		2.35
125	69	71.2	16.39	-2.2		2.06
160	69	71.5	15.34	-2.5		1.13
200	69	72.5	13.88	-3.5		0.74
250	72	75.0	16.00	-3.0		1.36
315	70	72.4	15.58	-2.4		0.69
400	70	72.2	17.16	-2.2		0.58
500	67	69.7	17.23	-2.7		0.35
630	69	71.6	17.41	-2.6		0.40
800	69	70.9	18.25	-1.9		0.37
1000	71	72.8	17.91	-1.8		0.54
1250	72	73.4	19.18	-1.4		0.50
1600	73	74.3	20.43	-1.3		0.62
2000	73	73.7	22.90	-0.7	1	0.64
2500	73	73.8	24.90	-0.8	4	0.78
3150	74	74.2	26.89	-0.2	8	0.87
4000	75	75.3	30.61	-0.3		1.06
5000	75	74.7	34.14	0.3		1.19

L_n = Normalized Sound Pressure Level, dB
L2 = Receiving Room Level, dB
d = Decay rate dB/second
ΔL_n = Uncertainty for 95% Confidence Level

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Test: ASTM E 2179 - 03 (2016) 6" Concrete Slab with Specimen

Test Report: NGC7018147 Date: 11/1/2018
Specimen Size [m²]: 17.8

Source room

Rm Temp [°C]: 21
Humidity [%]: 55

Receiving room

Volume [m³]: 128
Rm Temp [°C]: 18
Humidity [%]: 63

Frequency [Hz]	L_n [dB]	L2 [dB]	d [dB/s]	Corr. [dB]	u.Dev. [dB]	ΔL_n
50	59	62.4	14.8	-3.4		3.80
63	58	61.6	13.6	-3.6		4.10
80	58	59.7	19.68	-1.7		2.72
100	57	57.9	23.79	-0.9		2.00
125	70	71.5	19.48	-1.5	7	2.24
160	67	69.5	15.75	-2.5	4	1.69
200	68	70.9	15.24	-2.9	5	0.78
250	69	72.1	15.75	-3.1	6	1.31
315	65	67.5	15.76	-2.5	2	0.63
400	65	67.1	16.79	-2.1	3	0.40
500	60	62.0	17.35	-2.0		0.44
630	57	59.5	17.93	-2.5		0.57
800	52	54.0	18.39	-2.0		0.50
1000	46	48.0	17.95	-2.0		0.70
1250	42	44.1	19.44	-2.1		0.74
1600	38	39.2	20.99	-1.2		0.83
2000	31	31.6	23.50	-0.6		0.77
2500	27	27.6	25.74	-0.6		0.88
3150	24	24.1	27.83	-0.1		0.98
4000	21	20.9	32.56	0.1		1.03
5000	17	16.1	37.24	0.9		1.05

L_n = Normalized Sound Pressure Level, dB
L2 = Receiving Room Level, dB
d = Decay Rate, dB/second
ΔL_n = Uncertainty for 95% Confidence Level

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EFFECTIVENESS OF FLOOR COVERINGS IN REDUCING IMPACT SOUND TRANSMISSION THROUGH CONCRETE FLOORS

Test: ASTM E 2179 - 03 (2016)

Test Report: NGC7018147

Date: 11/1/2018

Increase in Impact Insulation Class ΔIIC = 21.0

Frequency [Hz]	L_o [dB]	L_c [dB]	L_d [dB]	L_{ref} [dB]	$L_{ref,c}$ [dB]
100	60	57	3	67.0	64.0
125	69	70	-1	67.5	68.5
160	69	67	2	68.0	66.0
200	69	68	1	68.5	67.5
250	72	69	3	69.0	66.0
315	70	65	5	69.5	64.5
400	70	65	5	70.0	65.0
500	67	60	7	70.5	63.5
630	69	57	12	71.0	59.0
800	69	52	17	71.5	54.5
1000	71	46	25	72.0	47.0
1250	72	42	30	72.0	42.0
1600	73	38	35	72.0	37.0
2000	73	31	42	72.0	30.0
2500	73	27	46	72.0	26.0
3150	74	24	50	72.0	22.0

L_o = Normalized Sound Pressure Level for Bare Standard Concrete Floor, dB
L_c = Normalized Sound Pressure Level for Covering over Concrete Floor, dB
L_d = L_o - L_c, dB
Lref = Reference Floor Average Normalized Impact Sound Pressure Level, dB
Lref,c = Lref - Ld, dB

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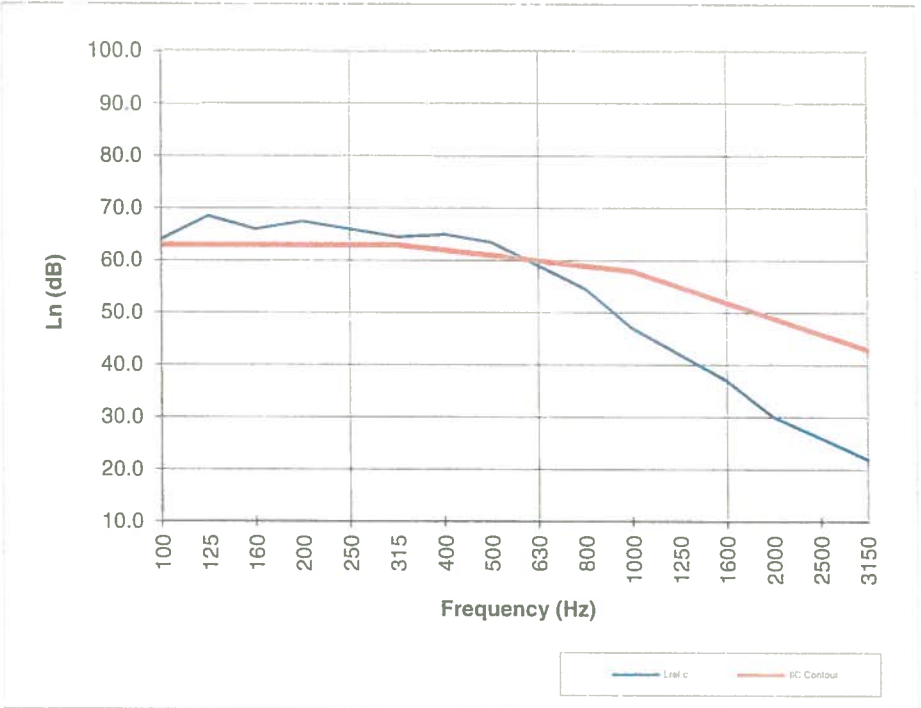
Test: ASTM E 2179 - 03 (2016)

Test Report: NGC7018147 Date: 11/1/2018

Increase in Impact Insulation Class ΔIIC = 21.0

Frequency [Hz]	Lref,c [dB]
100	64.0
125	68.5
160	66.0
200	67.5
250	66.0
315	64.5
400	65.0
500	63.5
630	59.0
800	54.5
1000	47.0
1250	42.0
1600	37.0
2000	30.0
2500	26.0
3150	22.0



* Due to high insulating value of specimen, background levels limit results at these frequencies.

Lref,c = Lref - Ld, dB

L_n = Normalized Sound Pressure Level, dB

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