

TEST REPORT

For

Diversified Industries
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Swedesboro, NJ 08085
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Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors Test

ASTM E 2179 – 03 (2009)

On

**8 Inch Concrete Slab Floor – Ceiling Assembly
Overlaid with LVT Allure[®] Ultra Flooring and 151223-06 Underlayment**

Report Number: NGC 7016040

Assignment Number: G-1256

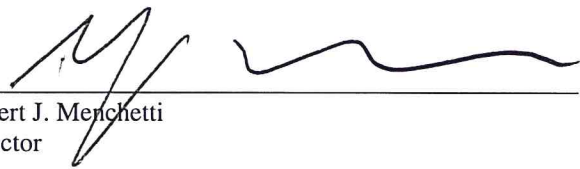
Test Date: 02/16/2016

Report Date: 03/17/2016

Submitted by:


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Reviewed by:


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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 or any agent of the U.S. Government. This report may not be reproduced except in full, without written approval of the laboratory.

Revision Summary:

Date	SUMMARY
Approval Date: 03/17/2016	Original issue date: 03/17/2016 Original NGCTS report: NGC 7016040

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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 (2009)

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

Specimen Description: 8 inch concrete slab floor-ceiling assembly, overlaid with according to client, LVT Allure[®] Ultra Flooring and 151223-06 Underlayment.

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

- 1 layer of, according to client, LVT Allure[®] Ultra Flooring. The flooring was floating on the 151223-06 Underlayment. Dimensions of the flooring was 1212.85 mm length x 190.5 mm width (47-3/4 in. x 7-1/2 in.)
Measured thickness: 5.08 mm (0.200 in.). Measured weight: 9.76 kg/m² (2.00 PSF)
- 1 layer of, according to client, 151223-06 Underlayment. The underlayment was floating on the concrete slab.
Measured thickness: 1.02 mm (0.04 in.). Measured weight: 0.098 kg/m² (0.02 PSF)
- 203.2 mm (8 in.) thick reinforced concrete slab, weighing: 488.2 kg/m² (100.0 PSF)

The overall weight of the test assembly is: 498.06 kg/m² (102.02 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. Mortar and grout cured for a minimum of 7 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				Bare 8" Concrete Slab		
(Not official due to slab thickness)				Page 4 of 7		
Test Report: NGC7016040		Date: 2/16/2016				
Specimen Size [m ²]: 17.8						
Source room			Receiving room			
Rm Temp [°C]: 18			Volume [m ³]: 127			
Humidity [%]: 65			Rm Temp [°C]: 18			
			Humidity [%]: 65			
Frequency	L _n	L ₂	d	Corr.	u.Dev.	ΔL _n
[Hz]	[dB]	[dB]	[dB/s]	[dB]	[dB]	
50	61	65.6	20.89	-4.6		1.4
63	55	59.6	20.08	-4.6		3.2
80	57	66.5	26.00	-5.5		1.8
100	60	64.6	23.43	-5.6		2.6
125	65	65.3	16.41	-4.3		2.8
160	67	71.5	14.72	-5.5		2.0
200	66	70.8	14.69	-5.8		0.7
250	65	69.8	15.79	-4.8		0.9
315	69	72.1	14.93	-4.1		0.5
400	66	70.3	16.45	-4.3		0.5
500	67	70.6	17.65	-3.6		0.5
630	67	70.0	17.85	-4.0		0.3
800	69	71.2	17.60	-4.2		0.3
1000	69	70.9	17.02	-3.9		0.3
1250	70	72.7	17.94	-2.7		0.2
1600	71	72.9	19.42	-2.9		0.2
2000	73	73.5	22.61	-2.5	1	0.2
2500	74	73.4	23.68	-2.4	4	0.1
3150	74	73.5	25.86	-1.5	8	0.2
4000	74	75.1	29.09	-1.1		0.2
5000	74	73.3	33.16	-0.3		0.3
L _n = Normalized Sound Pressure Level, dB L ₂ = Receiving Room Level, dB d = Decay Time, dB/second ΔL _n = Uncertainty for 95% Confidence Level						

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Test: ASTM E 2179 - 03		8" Concrete Slab with Specimen				
(Not official due to slab thickness)						Page 5 of 7
Test Report: NGC7016040		Date: 2/16/2016				
Specimen Size [m ²]: 17.8						
Source room			Receiving room			
Rm Temp [°C]: 18			Volume [m ³]: 127			
Humidity [%]: 65			Rm Temp [°C]: 18			
			Humidity [%]: 65			
Frequency	L _n	L ₂	d	Corr.	u.Dev.	ΔL _n
[Hz]	[dB]	[dB]	[dB/s]	[dB]	[dB]	
50	52	61.8	19.04	-4.8		1.55
63	56	55.4	20.07	-4.4		2.41
80	55	63.3	25.29	-6.3		1.91
100	57	63.7	23.53	-5.7		2.71
125	65	62.8	17.68	-4.8		2.96
160	68	70.1	15.08	-6.1	3	1.98
200	62	69.3	14.64	-5.3	3	0.92
250	63	68.6	14.79	-4.6	3	0.96
315	63	70.2	14.37	-4.2	5	0.41
400	59	67.0	16.38	-4.0	3	0.51
500	57	66.6	17.21	-3.6	4	0.24
630	56	65.8	17.45	-3.8	4	0.21
800	51	62.5	17.87	-3.5	2	0.28
1000	43	56.1	17.41	-3.1		0.25
1250	40	52.2	18.10	-3.2		0.33
1600	37	47.1	19.90	-3.1		0.22
2000	30	41.6	22.44	-2.6		0.15
2500	25	37.7	24.23	-1.7		0.21
3150	21	33.9	26.64	-1.9		0.14
4000	19	31.2	29.68	-1.2		0.22
5000	15	27.0	33.98	0.0		0.31
<p>L_n = Normalized Sound Pressure Level, dB L₂ = Receiving Room Level, dB d = Decay Time, dB/second ΔL_n = Uncertainty for 95% Confidence Level</p>						

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

Test: ASTM E 2179 - 03 (Not official due to slab thickness)

Test Report: NGC7016040

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 Date: 2/16/2016

Increase in Impact Insulation Class Δ IIC = 25.0

Frequency	L_o	L_c	L_d	L_{ref}	$L_{ref,c}$
[Hz]	[dB]	[dB]	[dB]	[dB]	[dB]
100	60	57	3	59	56.0
125	65	65	0	61	61.0
160	67	68	-1	66	67.0
200	66	62	4	65	61.0
250	65	63	2	65	63.0
315	69	63	6	68	62.0
400	66	59	7	66	59.0
500	67	57	10	67	57.0
630	67	56	11	66	55.0
800	69	51	18	67	49.0
1000	69	43	26	67	41.0
1250	70	40	30	70	40.0
1600	71	37	34	70	36.0
2000	73	30	43	71	28.0
2500	74	25	49	71	22.0
3150	74	21	53	72	19.0

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
 L_{ref} = Reference Floor Average Normalized Impact Sound Pressure Level, dB
 $L_{ref,c}$ = $L_{ref} - L_d$, dB

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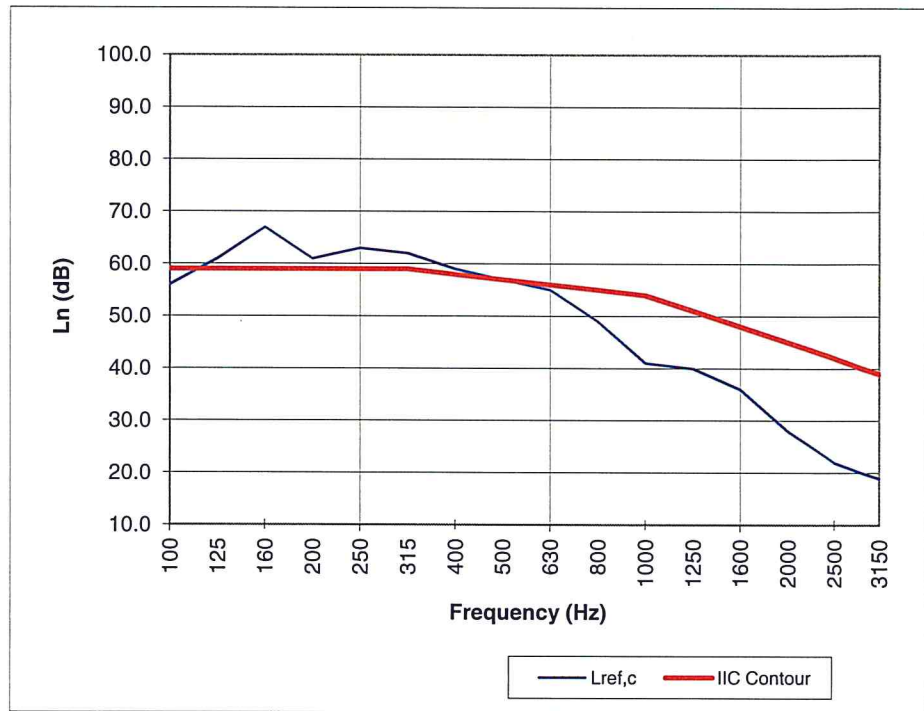
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Test Report: NGC7016040

Date: 2/16/2016

Increase in Impact Insulation Class Δ IIC = 25.0

Frequency [Hz]	Lref,c [dB]
100	56.0
125	61.0
160	67.0
200	61.0
250	63.0
315	62.0
400	59.0
500	57.0
630	55.0
800	49.0
1000	41.0
1250	40.0
1600	36.0
2000	28.0
2500	22.0
3150	19.0



* 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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