# TEST REPORT

For

**STC Architectural Products**
1200 Northland Ave.
Buffalo, NY 14215
Paul L. Battaglia / 716-392-3831

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

ASTM E 2179 – 03 (2009)

**On**

**6 Inch (152 mm) Concrete Slab Floor- Ceiling Assembly Overlaid with Rubber Sleeper System**

Report Number: NGC 7016172
Assignment Number: G-1286

Test Date: 08/25/2016
Report Date: 09/21/2016

Submitted by: _____
Anthony J. Rivers
Test Technician

Reviewed by: _____
Robert J. Menchetti
Director

## Revision Summary:

| Date | SUMMARY |
|---|---|
| Approval Date: 09/21/2016 | Original issue date: 09/21/2016<br>Original NGCTS report: NGC 7016172 |

Report Number: NGC 7016172

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: 6 inch concrete slab floor ceiling assembly overlaid with, according to client, Rubber Sleeper System.

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, Rubber Sleeper System. The Rubber Sleeper System was floating on the concrete slab. The measured thickness of the Rubber Sleeper System was 22.48 mm (0.885 in.), the measured weight of the Rubber Sleeper System was 7.42 kg/m$^2$ (1.52 PSF).
- 152.4 mm (6 in.) thick reinforced concrete slab, weighing: 366.2 kg/m$^2$ (75.0 PSF)

The overall weight of the test assembly is: 373.57 kg/m$^2$ (76.52 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.

Test: ASTM E 2179 - 03 (2009) Bare 6" Concrete Slab



Test Report: NGC7016172 Date: 8/25/2016

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] | $\Delta L_n$ |
|---|---|---|---|---|---|---|
| 50 | 62 | 67.7 | 15.02 | -5.7 | | 1.9 |
| 63 | 60 | 63.9 | 22.06 | -3.9 | | 2.0 |
| 80 | 58 | 64.5 | 33.75 | -6.5 | | 2.6 |
| 100 | 59 | 66.4 | 27.76 | -7.4 | | 3.4 |
| 125 | 68 | 73.0 | 27.32 | -5.0 | | 2.8 |
| 160 | 68 | 74.4 | 27.48 | -6.4 | | 2.8 |
| 200 | 68 | 73.9 | 32.64 | -5.9 | | 1.0 |
| 250 | 70 | 74.7 | 34.41 | -4.7 | | 1.0 |
| 315 | 69 | 74.2 | 32.45 | -5.2 | | 0.9 |
| 400 | 70 | 74.4 | 32.61 | -4.4 | | 0.3 |
| 500 | 68 | 72.6 | 30.27 | -4.6 | | 0.3 |
| 630 | 70 | 73.7 | 28.49 | -3.7 | | 0.3 |
| 800 | 70 | 73.9 | 28.44 | -3.9 | | 0.3 |
| 1000 | 71 | 74.9 | 27.59 | -3.9 | | 0.3 |
| 1250 | 72 | 75.2 | 27.76 | -3.2 | | 0.1 |
| 1600 | 73 | 75.7 | 28.60 | -2.7 | | 0.1 |
| 2000 | 74 | 76.6 | 29.79 | -2.6 | 1 | 0.3 |
| 2500 | 75 | 77.0 | 31.35 | -2.0 | 5 | 0.3 |
| 3150 | 75 | 76.9 | 33.17 | -1.9 | 8 | 0.4 |
| 4000 | 77 | 78.6 | 36.09 | -1.6 | | 0.6 |
| 5000 | 75 | 76.1 | 40.07 | -1.1 | | 0.7 |

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

Test: ASTM E 2179 - 03 (2009) 6" Concrete Slab with Specimen



Test Report: NGC7016172 Date: 8/25/2016

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] | $\Delta L_n$ |
|---|---|---|---|---|---|---|
| 50 | 57 | 59.9 | 15.5 | -6.0 | | 2.27 |
| 63 | 59 | 61.3 | 15.6 | -3.8 | | 1.52 |
| 80 | 56 | 57.5 | 32.1 | -1.5 | | 1.59 |
| 100 | 57 | 58.2 | 23.5 | -1.2 | | 2.70 |
| 125 | 68 | 70.4 | 15.7 | -2.4 | 2 | 2.52 |
| 160 | 68 | 70.5 | 15.3 | -2.5 | 2 | 1.20 |
| 200 | 69 | 71.7 | 14.8 | -2.7 | 3 | 0.78 |
| 250 | 74 | 76.4 | 16.2 | -2.4 | 8 | 0.92 |
| 315 | 73 | 75.7 | 15.7 | -2.7 | 7 | 0.49 |
| 400 | 67 | 69.2 | 17.4 | -2.2 | 2 | 0.51 |
| 500 | 59 | 61.5 | 17.9 | -2.5 | | 0.38 |
| 630 | 54 | 56.1 | 18.1 | -2.1 | | 0.34 |
| 800 | 47 | 48.4 | 19.2 | -1.4 | | 0.29 |
| 1000 | 42 | 43.9 | 18.4 | -1.9 | | 0.20 |
| 1250 | 40 | 41.8 | 19.6 | -1.8 | | 0.23 |
| 1600 | 40 | 41.0 | 21.0 | -1.0 | | 0.42 |
| 2000 | 35 | 35.5 | 23.6 | -0.5 | | 0.21 |
| 2500 | 34 | 34.3 | 26.0 | -0.3 | | 0.28 |
| 3150 | 28 | 28.2 | 27.8 | -0.2 | | 0.42 |
| 4000 | 20 | 19.5 | 32.2 | 0.5 | | 0.36 |
| 5000 | 12 | 12.8 | 36.0 | -0.8 | | 0.29 |

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

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

Test: ASTM E 2179 - 03 (2009)



Test Report: NGC7016172

Date: 8/25/2016

**Increase in Impact Insulation Class ΔIIC = 18.0**

| Frequency [Hz] | $L_o$ [dB] | $L_c$ [dB] | $L_d$ [dB] | $L_{ref}$ [dB] | $L_{ref,c}$ [dB] |
|---|---|---|---|---|---|
| 100 | 59 | 57 | 2 | 67.0 | 65.0 |
| 125 | 68 | 68 | 0 | 67.5 | 67.5 |
| 160 | 68 | 68 | 0 | 68.0 | 68.0 |
| 200 | 68 | 69 | -1 | 68.5 | 69.5 |
| 250 | 70 | 74 | -4 | 69.0 | 73.0 |
| 315 | 69 | 73 | -4 | 69.5 | 73.5 |
| 400 | 70 | 67 | 3 | 70.0 | 67.0 |
| 500 | 68 | 59 | 9 | 70.5 | 61.5 |
| 630 | 70 | 54 | 16 | 71.0 | 55.0 |
| 800 | 70 | 47 | 23 | 71.5 | 48.5 |
| 1000 | 71 | 42 | 29 | 72.0 | 43.0 |
| 1250 | 72 | 40 | 32 | 72.0 | 40.0 |
| 1600 | 73 | 40 | 33 | 72.0 | 39.0 |
| 2000 | 74 | 35 | 39 | 72.0 | 33.0 |
| 2500 | 75 | 34 | 41 | 72.0 | 31.0 |
| 3150 | 75 | 28 | 47 | 72.0 | 25.0 |

$L_o$ = 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

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

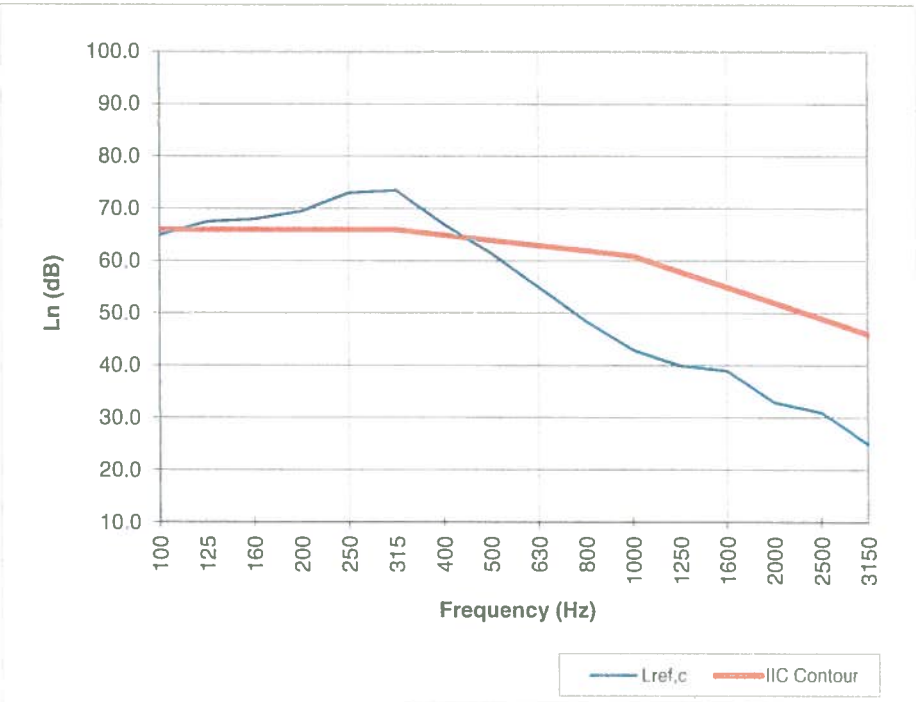
Test: ASTM E 2179 - 03 (2009)



Test Report: NGC7016172 Date: 8/25/2016

**Increase in Impact Insulation Class ΔIIC = 18.0**

| Frequency [Hz] | Lref,c [dB] |
|---|---|
| 100 | 65.0 |
| 125 | 67.5 |
| 160 | 68.0 |
| 200 | 69.5 |
| 250 | 73.0 |
| 315 | 73.5 |
| 400 | 67.0 |
| 500 | 61.5 |
| 630 | 55.0 |
| 800 | 48.5 |
| 1000 | 43.0 |
| 1250 | 40.0 |
| 1600 | 39.0 |
| 2000 | 33.0 |
| 2500 | 31.0 |
| 3150 | 25.0 |




* 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