

Test Report

FOR: **LATICRETE International, Inc**
Bethany, CT

Impact Sound Transmission
RAL-IN19-002

CONDUCTED: 2019-01-09

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ON: Porcelain tile, 125 Tri Max mortar (0.5 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling

TEST METHOD

Riverbank Acoustical Laboratories™ is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) as an ISO 17025:2005 Laboratory (NVLAP Lab Code: 100227-0) and for this test procedure. The test reported in this document conformed explicitly with ASTM E492-09: "Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine." The single number rating of the specimen was calculated according to ASTM E989-18: "Standard Classification for Determination of Single-Number Metrics for Impact Noise." A description of the measurement procedure and room specifications is available upon request.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Porcelain tile, 125 Tri Max mortar (0.5 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling. The building contractor and RAL staff compiled a detailed construction specification as follows, in order of installation:

Concrete Slab

Material: Wire-reinforced concrete
Dimensions: 4 @ 609.6 mm (24 in.) x 4267.2 mm (168 in.)
Thickness: 152.4 mm (6 in.)
Overall Weight: 3474.74 kg (7660.5 lbs)
Mass per Unit Area: 333.94 kg/m² (68.40 lbs/ft²)
Joints: Underside sealed with acoustical caulk and tape
Top filled with general purpose sand, sealed with ready mix compound

Note: A 0.1 mm (0.004 in.) thick polyethylene sheet was adhered with spray adhesive to the top face of the concrete slab in order to protect the slab surface.

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Mortar

Trade Name: Laticrete 125 Tri Max
Installed Thickness: Approximately 9.52 mm (0.375 in.)
Installation Method: 12.7 mm (0.5 in.) x 12.7 mm (0.5 in.) x 12.7 mm (0.5 in.) trowel
Trowel lines oriented parallel to length of concrete slab
Mix Ratio: 4.12 L water per 11.34 kg (25 lbs) dry mortar
Wet Weight: 61.58 kg (135.75 lbs)

Tiles

Material: Porcelain
Tile Dimensions: 304.8 mm (12 in.) x 304.8 mm (12 in.)
Tile Thickness: 7.87 mm (0.31 in.)
Overall Weight: 166.24 kg (366.5 lbs)
Installation: Layer of mortar applied to bottom face with straight edge of trowel
Approximately 3.18 mm (0.125 in.) thick mortar layer on tile
Treated tiles laid on troweled mortar layer
Tiles spaced 6.35 mm (0.25 in.) apart

Grout

Trade Name: Laticrete Spectralock Pro Premium Grout
Installation: Inserted into gaps between tiles
Overall Weight: 6.92 kg (15.25 lbs)

Note: Specimen construction completed 2018-12-12

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Physical Measures

Size: 2.44 m (96.0 in) wide by 4.27 m (168.0 in) long
Overall Thickness: 0.17 m (6.6 in)
Overall Weight: 3709.48 kg (8178 lbs)
Transmission Area: 10.405 m² (112 ft²)
Mass per Unit Area: 356.51 kg/m² (73.02 lbs/ft²)

Test Aperture

Size: 4.27 m (14.0 ft.) by 2.44 m (8 ft.)
Filler Wall: None
Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 131.3 m³
Temperature: 22.8 °C ± 0.0 °C
Relative Humidity: 49.5 % ± 1.0 %

Receive Room

Volume: 82.64 m³
Temperature: 22.8 °C ± 0.0 °C
Relative Humidity: 48.0 % ± 2.0 %

Requirements

Temperature: 22° C +/- 5° C, not more than 3° C change over all tests.
Relative Humidity: ≥ 30% RH; not more than +/- 3% change over all tests.

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Figure 1 – Completed specimen mounted in test opening



Figure 2 – Typical application of mortar to rear face of tile prior to installation

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Figure 3 – Mortar and tiles partially installed over concrete slab



Figure 4 – Underside of concrete slab

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TEST RESULTS

The averaged sound pressure levels, normalized to an acoustical absorption of 10 m², are tabulated at the sixteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the test data is within the limits set by the ASTM Standard E989-06 (2012).

<u>FREQ.</u>	<u>Ln</u>	<u>ΔLn</u>	<u>DEV</u>	<u>FREQ.</u>	<u>Ln</u>	<u>ΔLn</u>	<u>DEV</u>
100	58	2.31	0	800	69	2.33	5
125	57	1.57	0	1000	66	1.77	3
160	60	1.28	0	1250	64	3.75	4
200	62	1.67	0	1600	61	1.06	4
250	66	0.69	0	2000	56	0.87	2
315	70	0.96	2	2500	52	1.02	1
400	68	0.62	1	3150	48	1.32	0
500	70	0.87	4				
630	69	1.51	4				

IIC=44

ABBREVIATION INDEX

- FREQ. = FREQUENCY, HERTZ, (cps)
- Ln = NORMALIZED SOUND PRESSURE LEVEL, dB
- ΔLn = 95% UNCERTAINTY LIMIT FOR Ln, dB
- DEV. = DEVIATION FROM SHIFTED IIC CONTOUR, dB (SUM OF DEV = 30)
- IIC = IMPACT INSULATION CLASS
- * = INDICATES A CORRECTION HAS BEEN APPLIED TO DATA DUE TO BACKGROUND NOISE LEVELS

Tested by *Marc Sciaky*
Marc Sciaky
Senior Experimentalist

Report by *Malcolm Kelly*
Malcolm Kelly
Acoustician

Approved by *Eric P. Wolfram*
Eric P. Wolfram
Laboratory Manager



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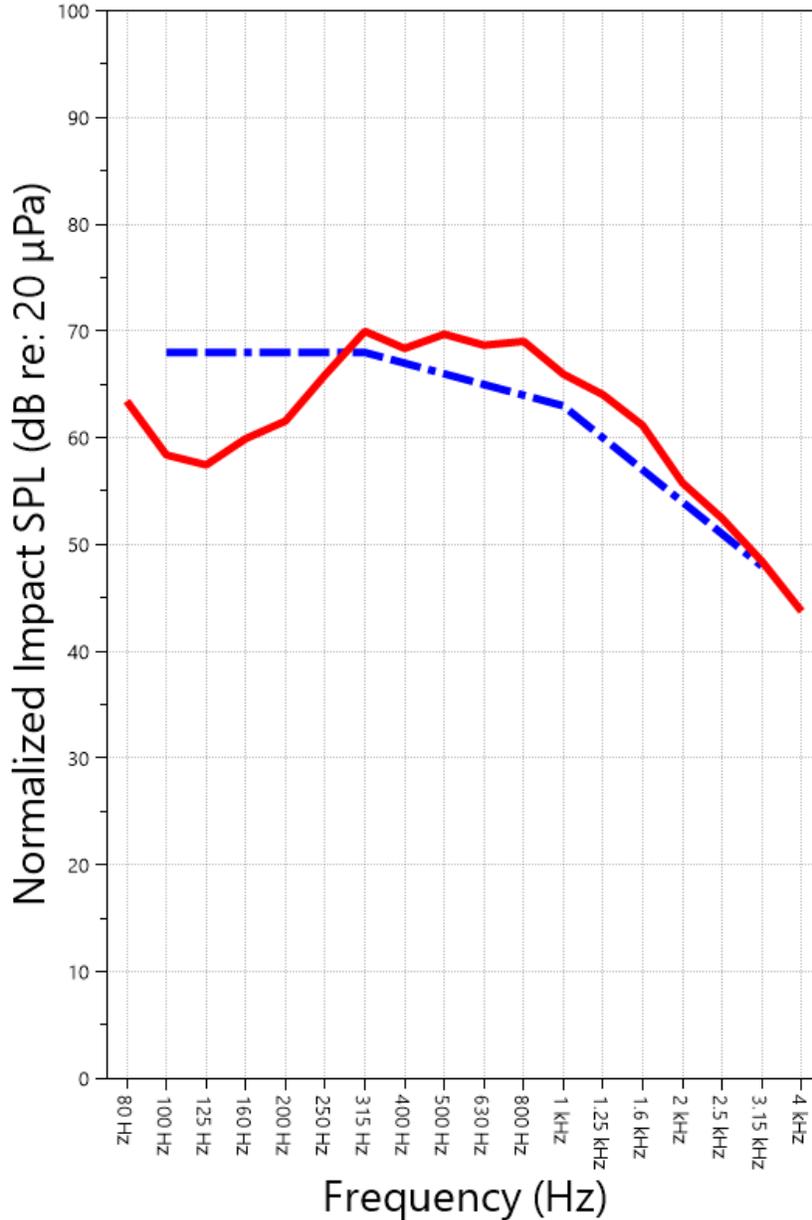
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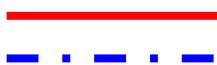
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IMPACT SOUND TRANSMISSION REPORT

Porcelain tile, 125 Tri Max mortar (0.5 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling



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IMPACT SOUND PRESSURE LEVEL
IMPACT INSULATION CLASS CONTOUR

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APPENDIX A: Extended Frequency Range Data

Specimen: Porcelain tile, 125 Tri Max mortar (0.5 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling (See Full Report)

The following non-accredited data were obtained in accordance with ASTM E989-06 (2012), but extend beyond the defined frequency range of 100Hz to 3,150Hz. These unofficial results are representative of the RAL test environment only and intended for research & comparison purposes.

1/3 Octave Band Center Frequency (Hz)	Normalized Impact Sound Pressure Level (dB)	ΔL_n 95% Uncertainty Limit (dB)
31.5	56	6.94
40	56	3.94
50	58	1.35
63	60	2.82
80	63	5.76
100	58	2.31
125	57	1.57
160	60	1.28
200	62	1.67
250	66	0.69
315	70	0.96
400	68	0.62
500	70	0.87
630	69	1.51
800	69	2.33
1000	66	1.77
1250	64	3.75
1600	61	1.06
2000	56	0.87
2500	52	1.02
3150	48	1.32
4000	44	1.59
5000	40	1.75
6300	35	1.67
8000	32	2.07
10000	29	1.76
12500	25	2.22

1512 S BATAVIA AVENUE
GENEVA, IL 60134
630-232-0104

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APPENDIX B: Instruments of Traceability

Specimen: Porcelain tile, 125 Tri Max mortar (0.5 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling (See Full Report)

<u>Description</u>	<u>Model</u>	<u>Serial Number</u>	<u>Date of Certification</u>	<u>Calibration Due</u>
System 2	Type 3160-A-042	3160-106974	2018-08-09	2019-08-09
Bruel & Kjaer Mic And Preamp D	Type 4943-B-001	2311440	2018-09-28	2019-09-28
Wood Case Tapping Machine	Type 3204	226940	2018-08-23	2019-08-23
Bruel & Kjaer Pistonphone	Type 4228	2781248	2018-08-06	2019-08-06
EXTECH Hygro 330	SD700	A083330	2018-09-07	2019-09-07
EXTECH Hygro 322	SD700	A083322	2018-09-07	2019-09-07

END