

## Test Report

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

**Impact Sound Transmission**  
**RAL-IN19-004**

CONDUCTED: 2019-02-07

Page 1 of 9

ON: Porcelain tile, 125 Tri Max mortar (0.25 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling

### TEST METHODOLOGY

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. The results presented in this report apply to the individual test specimen as described and assembled.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Porcelain tile, 125 Tri Max mortar (0.25 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**

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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/m<sup>2</sup> (68.40 lbs/ft<sup>2</sup>)  
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.*

#### **Mortar**

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Trade Name: Laticrete 125 Tri Max  
Installed Thickness: Approximately 6.35 mm (0.25 in.)  
Installation Method: 6.35 mm (0.25 in.) x 9.52 mm (0.375 in.) x 6.35 mm (0.25 in.) trowel  
Trowel lines oriented parallel to length of concrete slab  
Mix Ratio: 4.375 L water per 11.34 kg (25 lbs) dry mortar  
Wet Weight: 44.57 kg (98.25 lbs)

## Test Report

LATICRETE International, Inc  
2019-02-07

RAL-IN19-004  
Page 2 of 9

### Tiles

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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: 166.47 kg (367 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  
Installation Date: 2019-01-09

### Grout

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Trade Name: Laticrete Spectralock Pro Premium Grout  
Installation: Inserted into gaps between tiles  
Overall Weight: 7.94 kg (17.5 lbs)  
Installation Date: 2019-01-11

## Test Report

LATICRETE International, Inc  
2019-02-07

RAL-IN19-004  
Page 3 of 9

### Physical Measures

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Size: 2.44 m (96.0 in) wide by 4.27 m (168.0 in) long  
Thickness: 0.17 m (6.5 in)  
Weight: 3693.72 kg (8143.25 lbs)  
Transmission Area: 10.405 m<sup>2</sup> (112 ft<sup>2</sup>)  
Mass per Unit Area: 354.99 kg/m<sup>2</sup> (72.71 lbs/ft<sup>2</sup>)

### Test Aperture

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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

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#### Source Room

Volume: 131.3 m<sup>3</sup>  
Temperature: 22.8 °C ± 0.0 °C  
Relative Humidity: 49.5 % ± 1.0 %

#### Receive Room

Volume: 82.64 m<sup>3</sup>  
Temperature: 23.3 °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.

**Test Report**

**LATICRETE International, Inc**  
2019-02-07

**RAL-IN19-004**  
Page 4 of 9



Figure 1 – Completed specimen mounted in test opening, as viewed from source room



Figure 2 – Pretreatment of tiles with smooth mortar layer

**Test Report**

**LATICRETE International, Inc**  
2019-02-07

**RAL-IN19-004**  
Page 5 of 9



Figure 3 – Mortar and tile partially installed over concrete slab



Figure 4 – Underside of completed test specimen, as viewed from receive room

**Test Report**

**LATICRETE International, Inc**  
2019-02-07

**RAL-IN19-004**  
Page 6 of 9

TEST RESULTS

The averaged sound pressure levels, normalized to 10 m<sup>2</sup>, 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 E492-09 (2016)

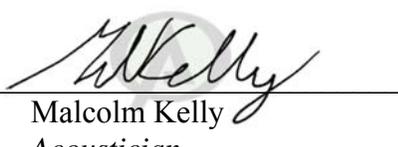
<u>FREQ.</u>	<u>Ln</u>	<u>ΔLn</u>	<u>DEV</u>	<u>FREQ.</u>	<u>Ln</u>	<u>ΔLn</u>	<u>DEV</u>
100	60	1.33	0	800	68	2.55	3
125	58	1.53	0	1000	65	1.74	1
160	61	1.53	0	1250	64	1.62	3
200	62	2.06	0	1600	64	1.27	6
250	65	2.00	0	2000	59	1.46	4
315	69	1.64	0	2500	55	4.30	3
400	68	2.81	0	3150	53	1.45	4
500	68	1.59	1				
630	68	2.49	2				

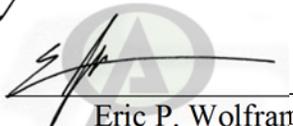
IIC=43

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 = 27 )
- IIC = IMPACT INSULATION CLASS
- \* = INDICATES A CORRECTION HAS BEEN APPLIED TO DATA DUE TO BACKGROUND NOISE LEVELS

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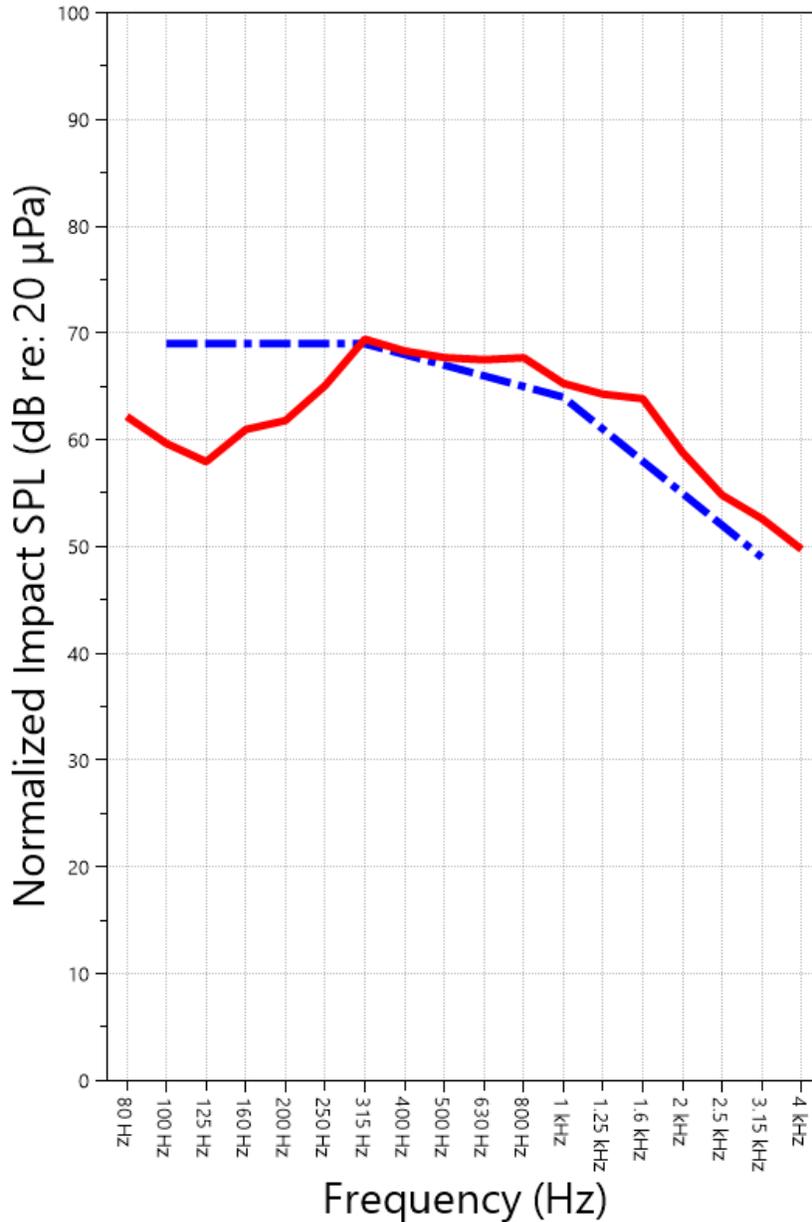
**Test Report**

**LATICRETE International, Inc**  
 2019-02-07

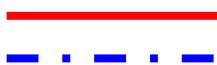
**RAL-IN19-004**  
 Page 7 of 9

**IMPACT SOUND TRANSMISSION REPORT**

Porcelain tile, 125 Tri Max mortar (0.25 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling



**IIC=43**



**IMPACT SOUND PRESSURE LEVEL**  
**IMPACT INSULATION CLASS CONTOUR**

## Test Report

LATICRETE International, Inc  
2019-02-07

RAL-IN19-004  
Page 8 of 9

### APPENDIX A: Extended Frequency Range Data

Specimen: Porcelain tile, 125 Tri Max mortar (0.25 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)	$\Delta L_n$ 95% Uncertainty Limit (dB)
31.5	52	14.23
40	58	8.86
50	60	5.35
63	58	2.87
80	62	5.45
100	60	1.33
125	58	1.53
160	61	1.53
200	62	2.06
250	65	2.00
315	69	1.64
400	68	2.81
500	68	1.59
630	68	2.49
800	68	2.55
1000	65	1.74
1250	64	1.62
1600	64	1.27
2000	59	1.46
2500	55	4.30
3150	53	1.45
4000	50	1.49
5000	46	1.58
6300	41	1.81
8000	35	1.28
10000	32	2.16
12500	29	2.26

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## Test Report

LATICRETE International, Inc  
2019-02-07

RAL-IN19-004  
Page 9 of 9

### APPENDIX B: Instruments of Traceability

Specimen: Porcelain tile, 125 Tri Max mortar (0.25 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

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