

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

An  ALION Technical Center

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WALLACE CLEMENT SABINE

## Test Report

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

**Sound Transmission Loss**  
**RAL-TL19-004**

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 E90-09 (2016): "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements." The single number rating of the specimen was calculated according to ASTM E413-16: "Classification for Rating Sound Insulation." A description of the measurement procedure and room specifications is available upon request. The transmission loss values are for a single direction of measurement. The product designation used in this report was provided to RAL by the sponsor and attributed to the specimen under test.

### 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**

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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.*

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### Mortar

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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

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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: 166.24 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

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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

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Overall Dimensions: 2.44 m (96.0 in) wide by 4.27 m (168.0 in) high  
Overall Thickness: 0.17 m (6.6 in)  
Overall Weight: 3709.48 kg (8178 lbs)  
Transmission Area: 10.405 m<sup>2</sup> (112 ft<sup>2</sup>)  
Mass per Unit Area: 356.51 kg/m<sup>2</sup> (73.02 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: 48.5 % ± 1.0 %

#### Receive Room

Volume: 82.64 m<sup>3</sup>  
Temperature: 22.8 °C ± 0.0 °C  
Relative Humidity: 47.0 % ± 0.0 %

#### Requirements

Temperature: 22° C +/- 2° C, not more than 3° C change over all tests.  
Relative Humidity: ≥ 30%, not more than +/- 3% change over all tests.

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



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

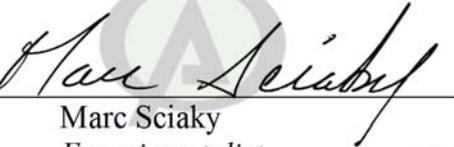
Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09 (2016).

<u>FREQ.</u>	<u>TL</u>	<u>ΔTL</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>TL</u>	<u>ΔTL</u>	<u>DEF.</u>
100	36	0.52	0	800	57	0.13	0
125	42	0.52	0	1000	60	0.12	0
160	41	0.50	1	1250	62	0.11	0
200	41	0.39	4	1600	62	0.11	0
250	42	0.45	6	2000	65	0.10	0
315	45	0.23	6	2500	68	0.10	0
400	46	0.38	8	3150	71	0.09	0
500	50	0.15	5	4000	74	0.09	0
630	54	0.19	2	5000	75	0.48	0

STC=55

ABBREVIATION INDEX

- FREQ. = FREQUENCY, HERTZ
- TL = TRANSMISSION LOSS, dB
- ΔTL = 95% CONFIDENCE INTERVAL FOR TL MEAUREMENTS, dB
- DEF. = DEFICIENCIES, dB BELOW STC CONTOUR (SUM OF DEF = 32)
- STC = SOUND TRANSMISSION CLASS

Tested by   
 Marc Sciaky  
 Experimentalist

Report by   
 Malcolm Kelly  
 Acoustician

Approved by   
 Eric P. Wolfram  
 Laboratory Manager



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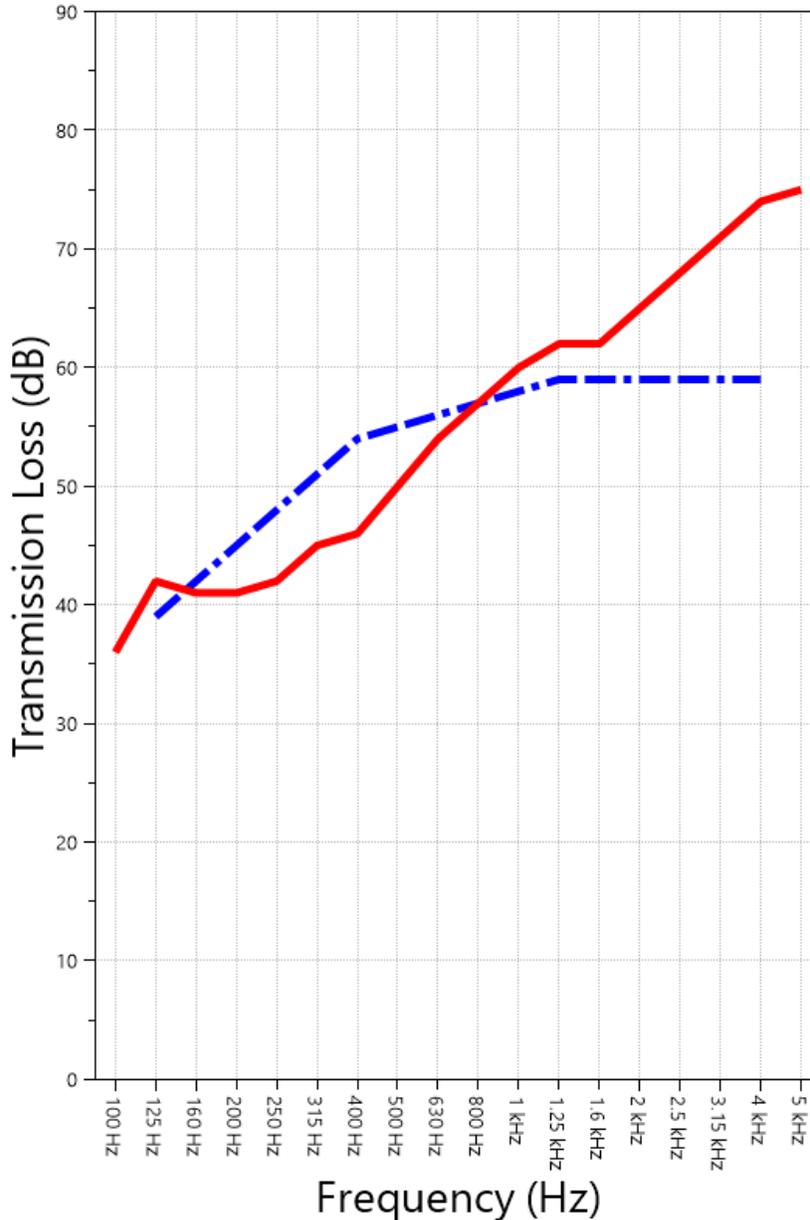
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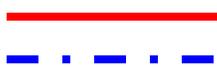
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SOUND TRANSMISSION REPORT

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



STC=55



TRANSMISSION LOSS  
SOUND TRANSMISSION 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 E90-09 (2016), but extend beyond the defined frequency range of 100Hz to 5,000Hz. These unofficial results are representative of the RAL test environment only and intended for research & comparison purposes. Sampling precision observed during this procedure is reported below.*

1/3 Octave Band Center Frequency (Hz)	Sound Transmission Loss (dB)	95% Confidence Interval $\Delta$ TL (Eq. A2.5) (dB)
31.5	44	4.12
40	31	1.14
50	34	0.63
63	34	0.79
80	35	0.58
100	36	0.52
125	42	0.52
160	41	0.50
200	41	0.39
250	42	0.45
315	45	0.23
400	46	0.38
500	50	0.15
630	54	0.19
800	57	0.13
1000	60	0.12
1250	62	0.11
1600	62	0.11
2000	65	0.10
2500	68	0.10
3150	71	0.09
4000	74	0.09
5000	75	0.48
6300	75	0.13
8000	72	0.12
10000	64	0.11
12500	53	0.13

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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
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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END