

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-TL19-017

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 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 (0.25 in. trowel), Spectralock Pro grout over 6 in. concrete slab, no ceiling. A full internal inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

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.

Mortar

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)



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Test Report

LATICRETE International, Inc
2019-02-07

RAL-TL19-017
Page 2 of 9

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
Installation Date: 2019-01-09

Grout

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

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Test Report

LATICRETE International, Inc
2019-02-07

RAL-TL19-017
Page 3 of 9

Physical Measures

Overall Dimensions: 2.44 m (96.0 in) wide by 4.27 m (168.0 in) high
Overall Thickness: 0.17 m (6.5 in)
Overall Weight: 3693.72 kg (8143.25 lbs)
Transmission Area: 10.405 m² (112 ft²)
Mass per Unit Area: 354.99 kg/m² (72.71 lbs/ft²)

Test Aperture

Size: 4.27 m (14.0 ft) x 2.44 m (8.0 ft)
Filler Wall: None
Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 131.3 m³
Temperature: 22.5 °C ± 0.6 °C
Relative Humidity: 48.5 % ± 1.0 %

Receive Room

Volume: 82.64 m³
Temperature: 23.3 °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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Test Report

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RAL-TL19-017
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

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2019-02-07

RAL-TL19-017
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

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Test Report

LATICRETE International, Inc
 2019-02-07

RAL-TL19-017
 Page 6 of 9

TEST RESULTS

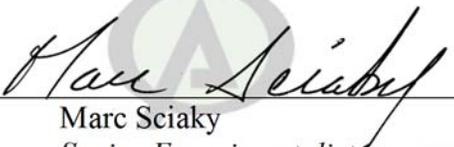
Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09 (2016).

<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	37	0.57	0	800	58	0.19	0
125	43	0.55	0	1000	61	0.16	0
160	43	0.36	0	1250	63	0.14	0
200	42	0.39	4	1600	63	0.14	0
250	43	0.56	6	2000	66	0.13	0
315	46	0.29	6	2500	69	0.11	0
400	47	0.27	8	3150	71	0.09	0
500	50	0.21	6	4000	73	0.09	0
630	56	0.17	1	5000	71	0.19	0

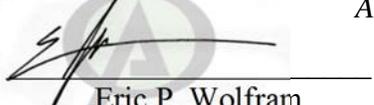
STC=56

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 = 31)
- STC = SOUND TRANSMISSION CLASS

Tested by 
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 Malcolm Kelly
 Acoustician

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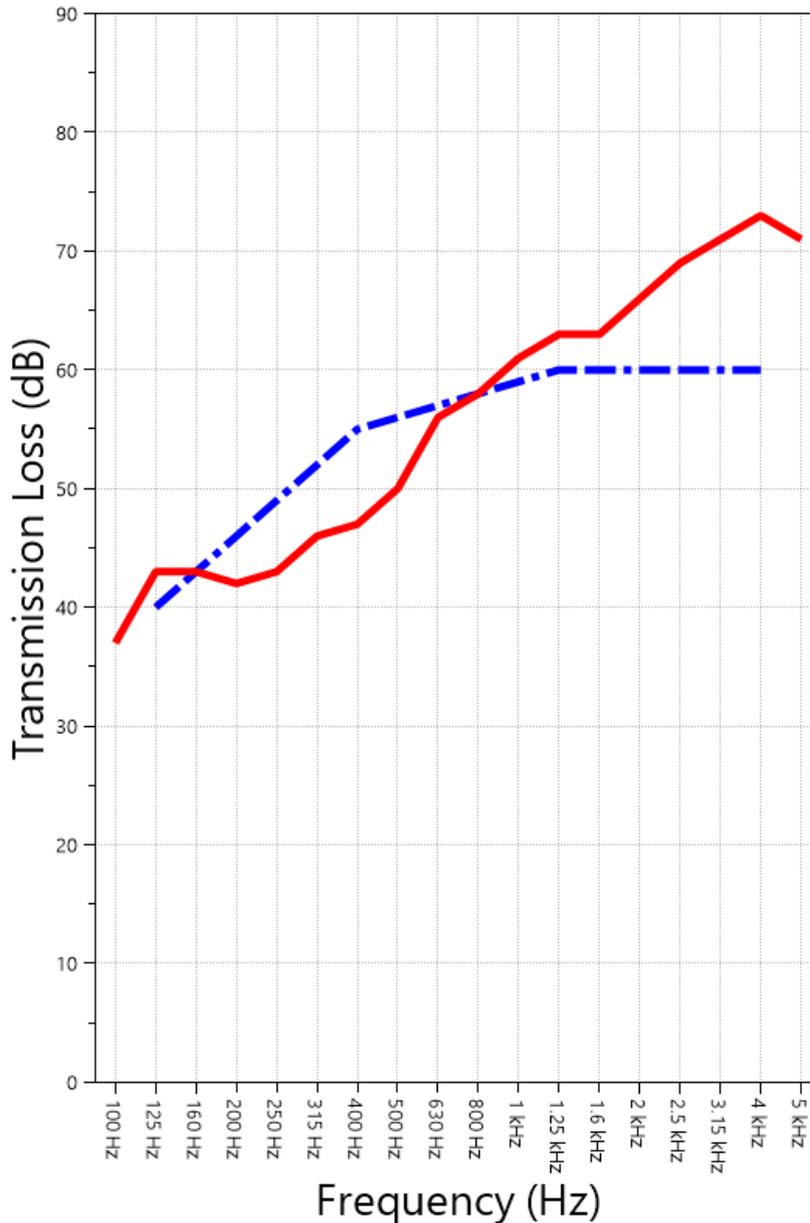
LATICRETE International, Inc
 2019-02-07

RAL-TL19-017

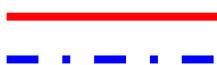
Page 7 of 9

SOUND TRANSMISSION REPORT

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



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TRANSMISSION LOSS
SOUND TRANSMISSION CLASS CONTOUR



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 2019-02-07

RAL-TL19-017
 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 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 Δ TL (Eq. A2.5) (dB)
31.5	47	3.47
40	30	1.33
50	36	0.99
63	36	1.32
80	36	0.83
100	37	0.57
125	43	0.55
160	43	0.36
200	42	0.39
250	43	0.56
315	46	0.29
400	47	0.27
500	50	0.21
630	56	0.17
800	58	0.19
1000	61	0.16
1250	63	0.14
1600	63	0.14
2000	66	0.13
2500	69	0.11
3150	71	0.09
4000	73	0.09
5000	71	0.19
6300	71	0.07
8000	68	0.08
10000	61	0.09
12500	50	0.18



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2019-02-07

RAL-TL19-017
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
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