

RIVERBANK ACOUSTICAL LABORATORIES

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

An ALION Technical Center

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FOUNDED 1918 BY
WALLACE CLEMENT SABINE

Test Report

FOR: **PROFLEX® PRODUCTS, INC**
Haines City, FL

Impact Sound Transmission
RAL-IN17-003

CONDUCTED: 2017-01-05

Page 1 of 8

ON: Quarry tile, MSC-90 underlayment, 8.0 inch 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 E989-06 (2012): "Standard Classification for Determination of Impact Insulation Class (IIC)." A description of the measuring procedure and room qualifications is available upon request.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Quarry tile, MSC-90 underlayment, 8.0 inch concrete slab, no ceiling.

The building contractor and RAL staff compiled a detailed construction specification as follows:

Flooring

Underlayment: MSC-90 applied with peel & stick adhesive
Underlayment Thickness: 2.3 mm (0.09 in.)
Underlayment Weight: 54.09 kg (119.25 lbs.)
Mortar: Thinset Mortar installed between tile and underlayment
Trowel: 1/4" 3/8" 1/4"
Mortar Weight: 92.31 kg (203.5 lbs.)
Tile: Quarry Tile
Tile Manufacturer: Metropolitan Ceramics
Tile Dimensions: 152.4 mm (6 in.) x 152.4 mm (6 in.)
Tile Thickness: 11 mm (0.433 in.)
Tile Spacing: 6.35 mm (0.25 in.)
Tile Weight: 321.8 kg (709.5 lbs.)
Grout: Sanded Grout
Grout Weight: 44.45 kg (98 lbs.)



NVLAP LAB CODE 100227-0

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Concrete Slab

Dimensions: Ten at 609.60 mm (24.0 in.) wide by 4.23 m (166.50 in.) long

Thickness: 203.2 mm (8 in.)

Material: Wire-reinforced concrete

Weight: 12,462 kg (27,474 lbs.)

Joints: Sealed with caulk (underside)

Filled with general purpose sand, sealed with ready mix compound.

Note: The slab surface was protected with a single layer of loose laid red rosin paper.

Physical Measures

Size: 4.27 m (168.00 in.) wide by 6.10 m (240.00 in.) long

Thickness: 226.57 mm (8.92 in.)

Weight: 13302.16 kg (29325.75 lbs.)

Transmission Area: 26.01 m² (280.00 ft²)

Mass per Unit Area: 511.34 kg/m² (104.73 lbs./ft²)

Test Aperture

Size: 4.27 m (14.0 ft.) by 6.10 m (20.0 ft.)

Filler Wall: None

Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 137.5 m³ (4,856.3 ft³)

Temperature: 21±0°C (71±1°F)

Humidity: 56±1%

Receive Room

Volume: 87.1 m³ (3,075.7 ft³)

Temperature: 22±0°C (71±0°F)

Humidity: 56±0%

Requirements

Temperature: 22° C +/- 5° C, not more than 3° C change over all tests.

Humidity: ≥ 30% RH; not more than +/- 3% change over all tests.



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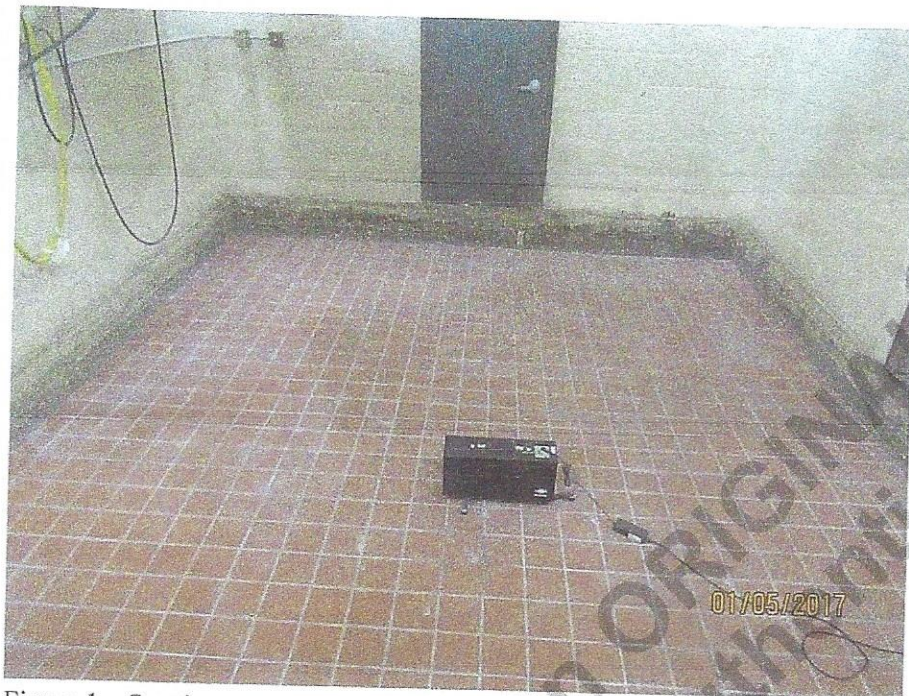


Figure 1 – Specimen mounted in the test opening.



Figure 2 - Detail of the test specimen partially installed over mortar and underlayment.



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Figure 3 - Detail of the underlayment.



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TEST RESULTS

The impact sound pressure levels, normalized to 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).

FREQ.	Ln	C.L.	DEV	FREQ.	Ln	C.L.	DEV
100	55	1.74		800	61	0.75	3
125	62	1.08		1000	60	0.84	3
160	61	1.44		1250	57	0.45	3
200	57	1.49		1600	54	0.30	3
250	62	1.83		2000	51	0.47	3
315	62	0.66		2500	46	0.68	1
400	63	0.93	2	3150	42	0.96	
500	63	0.45	3				
630	63	1.15	4				

IIC=50

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)
Ln = NORMALIZED IMPACT SOUND PRESSURE LEVEL, dB
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
DEV. = DEVIATION, dB > IIC CONTOUR (SUM OF DEV = 25)
IIC = IMPACT INSULATION CLASS
* = INDICATES A CORRECTION HAS BEEN APPLIED TO DATA
DUE TO BACKGROUND NOISE LEVELS

Tested by

Marc Sciaky
Experimentalist

Report by

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Acoustician

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IMPACT SOUND TRANSMISSION REPORT

Quarry tile, MSC-90 underlayment, 8.0 inch concrete slab, no ceiling



IIC=50

IMPACT SOUND PRESSURE LEVEL
IMPACT INSULATION CLASS CONTOUR



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APPENDIX A: Extended Frequency Range Data

Specimen: Quarry tile, MSC-90 underlayment, 8.0 inch 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)	Repeatability (95% ±)
31.5	71	4.85
40	46	1.65
50	47	1.43
63	57	1.52
80	53	1.48
100	55	1.74
125	62	1.08
160	61	1.44
200	57	1.49
250	62	1.83
315	62	0.66
400	63	0.93
500	63	0.45
630	63	1.15
800	61	0.75
1000	60	0.84
1250	57	0.45
1600	54	0.30
2000	51	0.47
2500	46	0.68
3150	42	0.96
4000	38	1.15
5000	34	0.81
6300	29	1.04
8000	26	1.09
10000	25	1.44
12500	19	1.80



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APPENDIX B: Instruments of Traceability

Specimen: Quarry tile, MSC-90 underlayment, 8.0 inch 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>
Bruel & Kjaer Pulse Analyzer - System4	Type 3560-C	2639093	2016-07-26	2017-07-26
Bruel & Kjaer Mic And Preamp E	Type 4943-B-001	2311441	2016-03-17	2017-03-17
Bruel & Kjaer Tapping Machine	Type 3207	2724862	2016-12-05	2017-12-05
Bruel & Kjaer Pistonphone	Type 4228	2781248	2016-07-25	2017-07-25
Omega Digital Thermo-Hygrometer A	Model # RH411	H0102487	2016-08-12	2017-08-12
Omega Digital Thermo-Hygrometer D	Model # RH411	H0102210	2016-07-13	2017-07-13

APPENDIX C: Revisions to Original Test Report

Specimen: Quarry tile, MSC-90 underlayment, 8 in. slabs, no ceiling (See Full Report)

<u>Date</u>	<u>Revision</u>
2018-08-31	Page 1: The underlayment thickness was revised to the correct 2.3mm based on a re-measurement of the lab sample.
2019-08-30	Page 1: added installation narrative for underlayment and thinset. -EPW
2019-08-30	Page 1-8: The original manufacturer/sponsor identification and specimen designation was changed to facilitate a private label sales agreement. The original sponsor has provided a letter to RAL on their company letterhead certifying that the product identified has not changed in materials, composition, or manufacturing methods since the original test date and the product sold under the private label agreement is exactly identical to the original specimen described in the test report and sourced from the same manufacturing process. -EPW

END



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