

Test Report

FOR: **Protecto Wrap Co.**
Denver, Colorado

Impact Sound Transmission
RAL-IN16-035

CONDUCTED: 2016-11-01

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ON: Porcelain Tile flooring - Thinset Mortar - Whisper Mat underlayment - 8 inch Concrete Slabs -
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 Porcelain Tile flooring - Thinset Mortar - Whisper Mat underlayment - 8 inch Concrete Slabs - No Ceiling.

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

Flooring

Underlayment:	Protecto Wrap Whisper Mat CS
Underlayment Thickness:	2.5 mm (0.098 in.)
Underlayment Weight:	53.18 kg (117.25 lbs.)
Mortar:	TEC Fast Setting Latex-Modified Mortar
Thin Set:	¼" ⅜" ¼"
Mortar Weight:	94.5 kg (208.25 lbs.)
Tile:	Gres Fine Porcellanato Ingelivo (Porcelain Stoneware Frost Resistant)
Tile Material:	Porcelain
Tile Dimensions:	301.62 mm (11.875 in.) x 301.62 mm (11.875 in.)
Tile Thickness:	5.5 mm (0.217 in.)
Tile Spacing:	6.35 mm (0.25 in.)
Tile Weight:	321.8 kg (709.5 lbs.)
Grout:	Tec 550 Power Grout (NB Fuller)
Grout Weight:	16.9 kg (37.25 lbs.)



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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 acoustical 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 rosin paper.

Physical Measures

Size: 4.27 m (168.00 in.) wide by 6.10 m (240.00 in.) long
Thickness: 223.27 mm (8.79 in.)
Weight: 12997.23 kg (28653.50 lbs.)
Transmission Area: 26.01 m² (280.00 ft²)
Mass per Unit Area: 499.62 kg/m² (102.33 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: 137.6 m³ (4,859.2 ft³)
Temperature: 23±0°C (73±0°F)
Humidity: 65±2%

Receive Room

Volume: 87.1 m³ (3,075.7 ft³)
Temperature: 23±0°C (74±1°F)
Humidity: 67±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 on the concrete slab. (Note: spacers were still present at the time the photo was taken, but were removed before installation of grout)

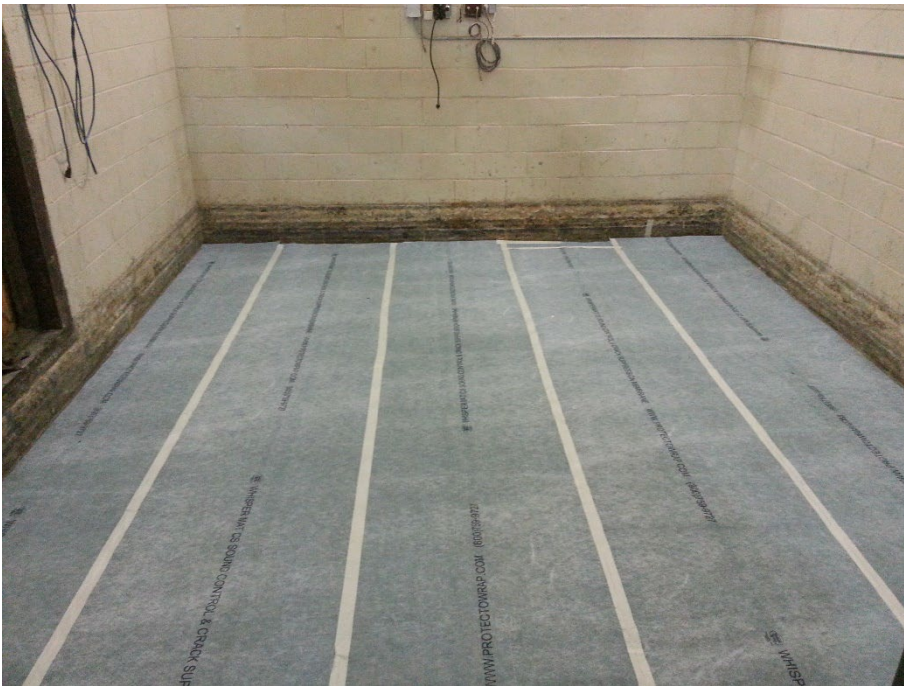


Figure 2 – Underlayment installed on the concrete slab.



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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).

<u>FREQ.</u>	<u>Ln</u>	<u>C.L.</u>	<u>DEV</u>	<u>FREQ.</u>	<u>Ln</u>	<u>C.L.</u>	<u>DEV</u>
100	52	1.03		800	59	0.72	2
125	62	2.57	1	1000	58	0.74	2
160	60	1.85		1250	53	0.37	
200	57	1.01		1600	50	1.04	
250	65	2.27	4	2000	47	0.44	
315	64	1.39	3	2500	42	0.60	
400	65	1.13	5	3150	38	0.66	
500	61	1.18	2				
630	62	0.74	4				


IIC=51

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 = 23)
- IIC = IMPACT INSULATION CLASS
- * = INDICATES A CORRECTION HAS BEEN APPLIED TO DATA DUE TO BACKGROUND NOISE LEVELS

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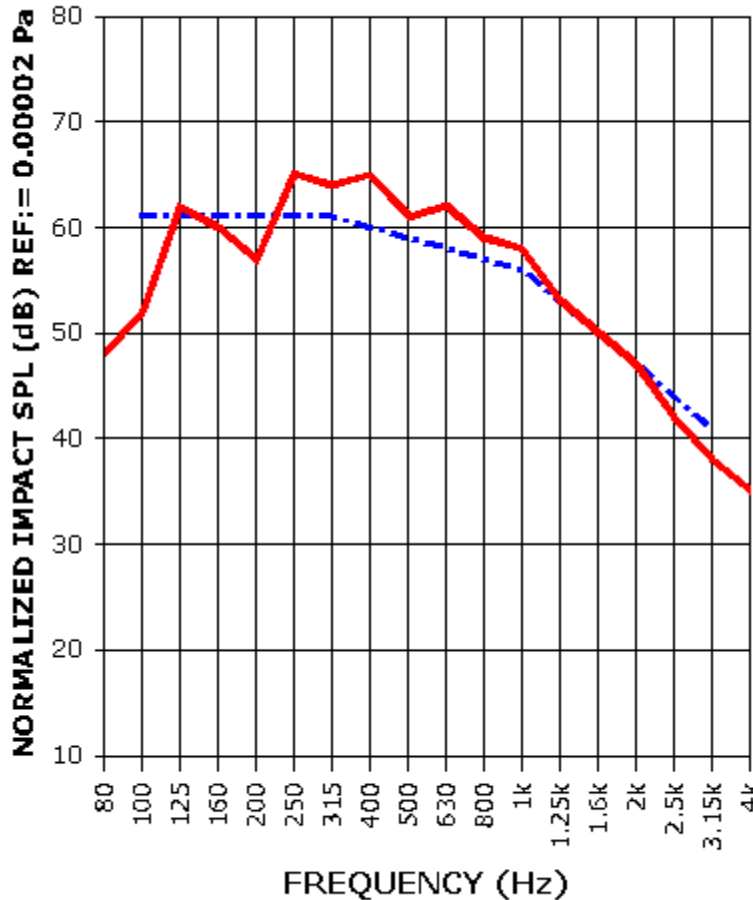
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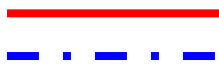
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IMPACT SOUND TRANSMISSION REPORT

Porcelain Tile flooring - Thinset Mortar - Whisper Mat underlayment - 8 inch
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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 flooring - Thinset Mortar - Whisper Mat underlayment - 8 inch Concrete Slabs - 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	75	3.13
40	49	1.43
50	50	2.74
63	53	4.95
80	48	3.51
100	52	1.03
125	62	2.57
160	60	1.85
200	57	1.01
250	65	2.27
315	64	1.39
400	65	1.13
500	61	1.18
630	62	0.74
800	59	0.72
1000	58	0.74
1250	53	0.37
1600	50	1.04
2000	47	0.44
2500	42	0.60
3150	38	0.66
4000	35	0.75
5000	28	1.19
6300	23	0.94
8000	19	1.77
10000	18	1.63
12500	13	1.80



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APPENDIX B: Instruments of Traceability

Specimen: Porcelain Tile flooring - Thinset Mortar - Whisper Mat underlayment - 8 inch Concrete Slabs - 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	2015-11-24	2016-11-24
Bruel & Kjaer Pistonphone	Type 4228	2781248	2016-07-25	2017-07-25
Omega Digital Thermo-Hygrometer B	Model # RH411	H0101841	2015-12-28	2016-12-28
Omega Digital Thermo-Hygrometer D	Model # RH411	H0102210	2016-07-13	2017-07-13

END



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