

## Test Report

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

**Sound Transmission Loss**  
**RAL-TL16-493**

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 E90-09: "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 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

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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

Overall Dimensions: 4.27 m (168.00 in.) wide by 6.10 m (240.00 in.) long  
Overall Thickness: 223.27 mm (8.79 in.)  
Overall Weight: 12997.23 kg (28653.50 lbs.)  
Transmission Area: 26.01 m<sup>2</sup> (280.00 ft<sup>2</sup>)  
Mass per Unit Area: 499.62 kg/m<sup>2</sup> (102.33 lbs./ft<sup>2</sup>)

### 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 m<sup>3</sup> (4859.2 ft<sup>3</sup>)  
Temperature: 23±0°C (73±0°F)  
Humidity: 65±1%

#### Receive Room

Volume: 87.1 m<sup>3</sup> (3075.7 ft<sup>3</sup>)  
Temperature: 23±0°C (74±1°F)  
Humidity: 68±1%

#### Requirements

Temperature: 22° C +/- 2° 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

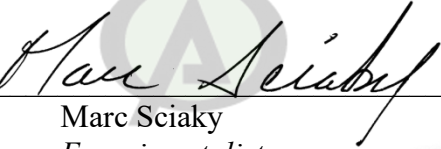
Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09.

<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>
100	40	0.52		800	60	0.30	
125	36	1.41	4	1000	65	0.25	
160	43	0.65		1250	69	0.19	
200	45	0.83	1	1600	72	0.13	
250	45	0.58	4	2000	75	0.13	
315	47	0.60	5	2500	77	0.13	
400	49	0.48	6	3150	82	0.10	
500	52	0.40	4	4000	84	0.06	
630	56	0.38	1	5000	86	0.07	


STC=56

ABBREVIATION INDEX

- FREQ. = FREQUENCY, HERTZ, (cps)
- T.L. = TRANSMISSION LOSS, dB
- C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
- DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 25)
- STC = SOUND TRANSMISSION CLASS

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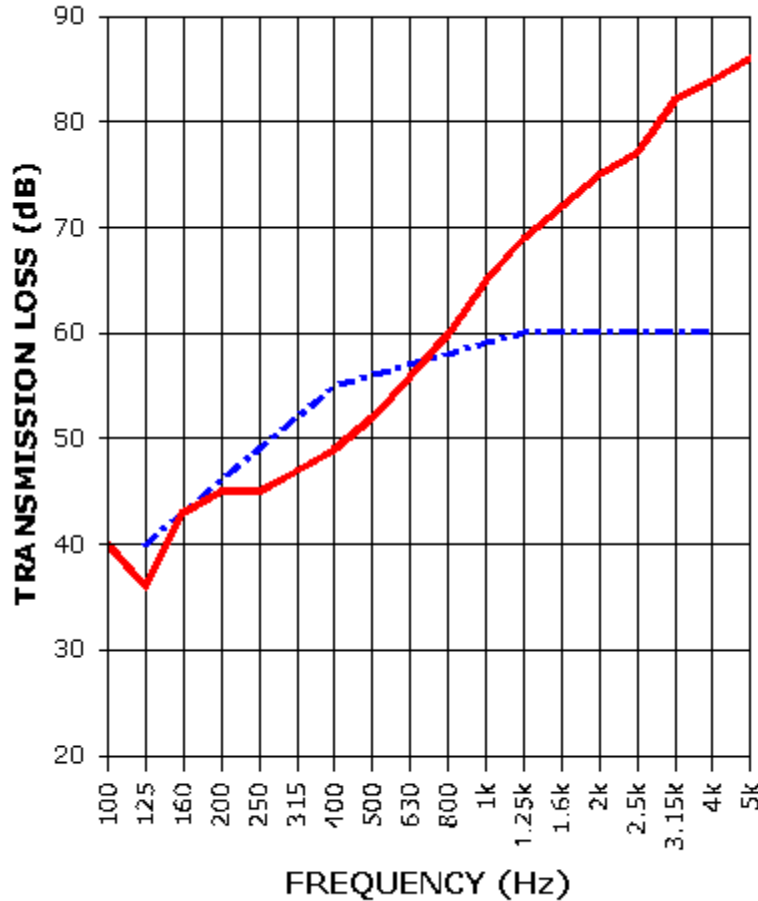
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SOUND TRANSMISSION REPORT

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



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TRANSMISSION LOSS  
SOUND TRANSMISSION LOSS 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 E90-09, 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.*

1/3 Octave Band Center Frequency (Hz)	Sound Transmission Loss (dB)	Uncertainty (95% ±)
31.5	25	1.21
40	49	1.16
50	46	0.63
63	40	0.66
80	38	0.82
100	40	0.52
125	36	1.41
160	43	0.65
200	45	0.83
250	45	0.58
315	47	0.60
400	49	0.48
500	52	0.40
630	56	0.38
800	60	0.30
1000	65	0.25
1250	69	0.19
1600	72	0.13
2000	75	0.13
2500	77	0.13
3150	82	0.10
4000	84	0.06
5000	86	0.07
6300	87	0.12
8000	82	0.22
10000	75	0.15
12500	63	0.05



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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 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

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