



## **Important Notice**

In August 1, 2013, PABCO® Gypsum, a division of PABCO® building products, LLC acquired the QuietRock® business and operations from Serious Energy, Inc. Serious Energy, Inc. corporate structure and legal name changed through the years from Quiet Solution, Inc. to Serious Materials, Inc to Serious Energy, Inc. The acquisition of the QuietRock® business by PABCO® Gypsum includes the products, technical data, test reports and other intellectual property. For the avoidance of confusion, references to "Quiet Solution", "Serious Materials", or "Serious Energy" used within test reports, in general, should be understood as references to PABCO® Gypsum as of August 1, 2013.

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# RIVERBANK ACOUSTICAL LABORATORIES

1512 S. BATAVIA AVENUE  
GENEVA, ILLINOIS 60134

Alion Science and Technology

630/232-0104  
FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## TEST REPORT

FOR: Serious Materials, Inc.  
Sunnyvale, CA

Sound Transmission Loss Test  
RAL™-TL10-120

ON: PRF-016-06 QuietRock ES and 5/8" Type X Gypsum,  
Staggered Wood Stud Wall, 16" on Center with R-19  
Fiberglass

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CONDUCTED: 14 April 2010

### TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-09 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the client as PRF-016-06 QuietRock ES and 5/8" Type X Gypsum, staggered wood stud wall, 16" on center with R-19 fiberglass. The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 2.74 m (108 in.) high and 171 mm (6.75 in.) thick. The specimen was installed by the manufacturer directly into the laboratory's 2.74 m (9 ft) by 4.27 m (14 ft) wood-lined steel frame and was sealed on the periphery (both sides) with dense mastic.

The description of the specimen was as follows: The specimen consisted of a staggered two-by-four wood stud wall on two-by-six wood top and bottom plates with a layer of R-19 fiberglass batt insulation in the shared cavity. One side of the wall was covered with a single layer of 5/8" QuietRock ES board and the other side was covered with a single layer of 5/8" Type X Gypsum. A more detailed description of the wall assembly appears in the sections below.

Floor Ceiling Plates and Vertical Framing: The wall had two 140 mm (5.5 in.) wide by 38 mm (1.5 in.) thick and 4.27 m (168 in.) long SPF wood plates and two 140 mm (5.5 in.) wide by 38 mm (1.5 in.) thick and 2.67 m (105.125 in.) long SPF verticals perimeter framing. Plates and vertical framing were attached to the top and bottom of the test frame with 64 mm (2.5 in.) long Type W screws on 610 mm (24 in.) centers. The total weight of the framing was 33 kg (72.75 lbs).

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Studs: Twenty (20) pieces of SPF wood 2 x 4's, actual 38 mm (1.5 in.) by 89 mm (3.5 in.) were cut to nominal 2.67 m (105 in.) long. Each row of ten (10) studs was spaced on nominal 405 mm (16 in.) centers attached to the two-by-six wood plates using 89 mm (3.5 in.) long Type W screws. The second row of studs was staggered from the first row with an offset of 8 inches. The total weight of the studs was 86.1 kg (190 lbs).

Insulation: Unfaced R-19 fiberglass insulation measuring 159 mm (6.25 in.) thick and 387 mm (15.25 in.) wide by 2.36 m (93 in.) high was installed in the cavities formed by the plates and studs. The side of the insulation was slit a nominal 102 mm (4 in.) deep to accommodate the offset row of studs. The total weight of the insulation was 14.7 kg (32.5 lbs).

Gypsum Wallboard: A layer of 16 mm (0.625 in.) thick QuietRock ES was applied to the studs vertically on one side. The board was attached to the studs with 41 mm (1.625 in.) long Type W bugle head drywall screws at 305 mm (12 in.) on center. A layer of 16 mm (0.625 in.) thick Type X Gypsum Board was applied to the studs vertically on the other side. The board was attached to the studs with 41 mm (1.625 in.) long Type W bugle head drywall screws at 305 mm (12 in.) on center. Total weight of the QuietRock ES as measured was 154.5 kg (340.5 lbs.). Total weight of the gypsum board as measured was 127.5 kg (281 lbs.). All joints and seams were staggered for each board layer application. Joints were sealed with QuietSeal 350 acoustical caulk and metal taped. Screw heads were covered with metal tape.

The weight of the specimen as measured was 418 kg (921.5 lbs.), an average of 35.7 kg/m<sup>2</sup> (7.3 lbs/ft<sup>2</sup>). The transmission area used in the calculations was 11.7 m<sup>2</sup> (126 ft<sup>2</sup>). The source and receiving room temperatures at the time of the test were 24°C (75±1°F) and 51±1% relative humidity. The source and receive reverberation room volumes were 178 m<sup>3</sup> (6,298 ft<sup>3</sup>) and 177 m<sup>3</sup> (6,255 ft<sup>3</sup>), respectively.

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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 TL 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	29	1.37		800	57	0.27	
125	33	0.78	6	1000	59	0.22	
160	35	0.77	7	1250	60	0.18	
200	38	0.51	7	1600	61	0.17	
250	45	0.67	3	2000	56	0.21	3
315	50	0.43	1	2500	58	0.19	1
400	52	0.29	2	3150	62	0.22	
500	53	0.24	2	4000	65	0.22	
630	56	0.33		5000	68	0.20	

STC=55

### ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)

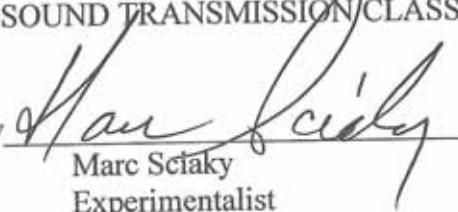
T.L. = TRANSMISSION LOSS, dB

C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT

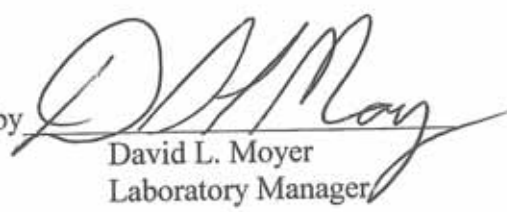
DEF. = DEFICIENCIES, dB < STC CONTOUR (SUM OF DEF = 32)

STC = SOUND TRANSMISSION CLASS

Tested by

  
Marc Sefaky  
Experimentalist

Approved by

  
David L. Moyer  
Laboratory Manager

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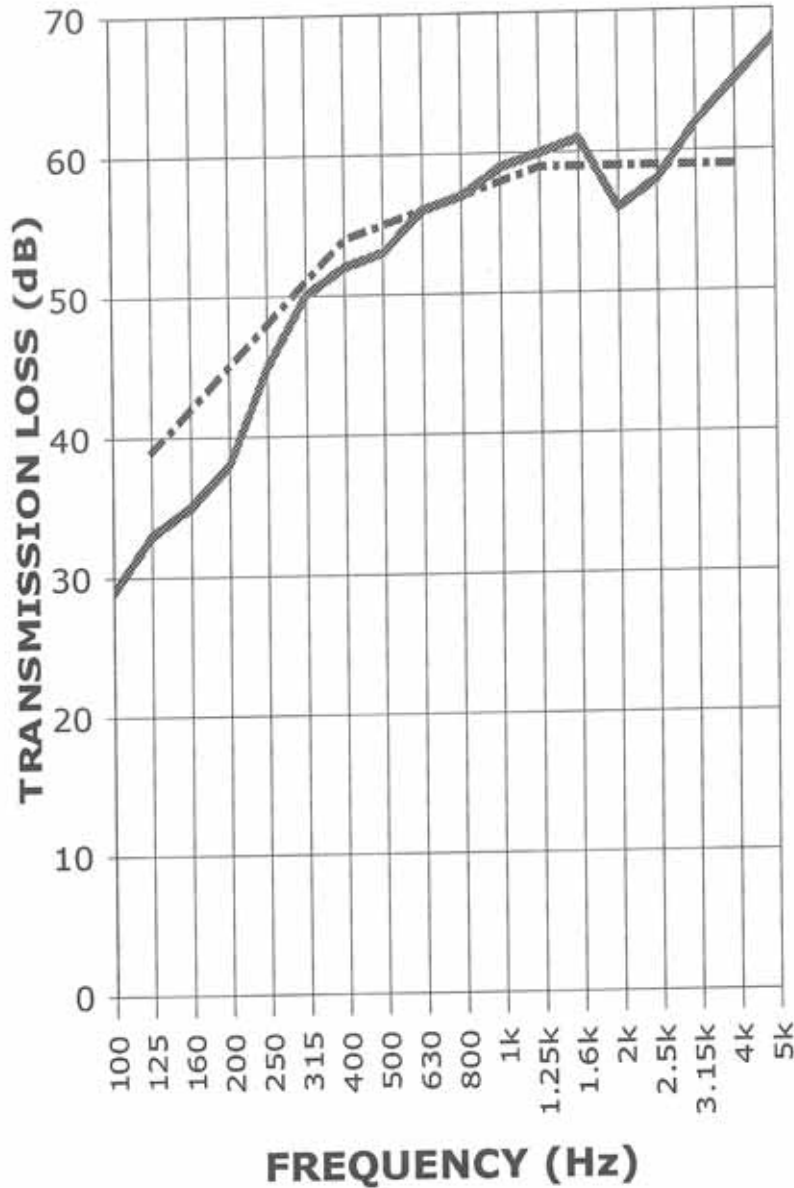
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STC = 55



TRANSMISSION LOSS  
SOUND TRANSMISSION LOSS CONTOUR

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### Appendix to ASTM E90 Sound Transmission Loss Test

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Product Description: PRF-016-06 QuietRock ES and 5/8" Type X Gypsum,  
Staggered Wood Stud Wall, 16" on Center with R-19 Fiberglass

### Additional Frequency Data for Transmission Loss Testing

As requested by the client, transmission loss (TL) values were calculated at additional test frequencies. Although the measurements were made in accordance with the procedures described in ASTM E90-09, they do not qualify as part of the standard. Since the results are representative of the test environment only, they are unofficial and intended for research and development guidelines rather than for commercial purposes. The transmission loss values at the additional frequencies were as follows:

RAL™-TL10-120	
1/3 Octave Center Frequency (Hz)	Sound Transmission Loss (dB)
50	15
63	16
80	25
6300	71
8000	74
10000	72

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