

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: **dB Sound Control**
Mt. Airy, NC

Sound Transmission Loss
RAL-TL18-585

CONDUCTED: 2018-10-05 (Report Revised 2019-04-29)

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ON: Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side

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 measuring procedure and room qualifications 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 Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side. A full internal inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

Plates / Base Track

Material: Clark Dietrich Pro-track 20 19mil steel track
Dimensions: 2 @ 2438.4 mm (96 in.) x 31.75 mm (1.25 in.)
Thickness: 92.07 mm (3.625 in.)
Installation: Friction fit to test frame over foam sill sealer
Overall Weight: 2.95 kg (6.5 lbs)
Mass per Unit Length: 0.60 kg/m (0.41 lbs/ft)

Studs

Material: Clark Dietrich ProStud 20 19mil steel stud
Dimensions: 5 @ 2743.2 mm (108 in.) x 31.75 mm (1.25 in.)
Thickness: 92.07 mm (3.625 in.)
Installation: Screwed to tracks at top and bottom
Side studs screwed to test frame at center (2 fasteners)
Stud Spacing: 609.6 mm (24 in.) on center
Fasteners: #8 wafer head stud screw, 12.7 mm (0.5 in.) length
Type W bugle head drywall screw, 31.75 mm (1.25 in.) length
Overall Weight: 9.07 kg (20 lbs)
Mass per Unit Length: 0.66 kg/m (0.44 lbs/ft)

Note: A 6.35 mm (0.25 in.) diameter bead of acoustical sealant was used to seal both sides of the specimen where framing members met the test frame (1.36 kg (3 lbs) total).

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Source Side

Layer 1

Material: Mass loaded vinyl
Dimensions: Two (2) sheets @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
Thickness: 2.0 mm (0.08 in.)
Installation: Screwed to studs, joint sealed with tape
Fasteners: #8 wafer head stud screw
Fastener Spacing: Four (4) screws per sheet distributed across top track
One (1) screw per sheet at midpoint of each stud
One (1) screw per sheet at bottom of center stud
Overall Weight: 19.62 kg (43.25 lbs)
Mass per Unit Area: 2.93 kg/m² (0.60 lbs/ft²)

Layer 2

Material: Type X gypsum board
Dimensions: 1 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
2 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 15.88 mm (0.625 in.)
Installation: Screwed through Layer 1 to studs
Fasteners: Type S bugle head drywall screws, 31.75 mm (1.25 in.) length
Fastener Spacing: 406.4 mm (16 in.) on center
Overall Weight: 73.03 kg (161 lbs)
Mass per Unit Area: 10.92 kg/m² (2.24 lbs/ft²)

Cavity

Material: R-13 unfaced fiberglass insulation batts
Dimensions: 4 @ 609.6 mm (24 in.) x 2743.2 mm (108 in.)
Thickness: 88.9 mm (3.5 in.)
Installation: Friction fit into cavities between studs
Overall Weight: 7.6 kg (16.75 lbs)
Density: 12.78 kg/m³ (0.80 lbs/ft³)

Receive Side

Material: Type X gypsum board
Dimensions: 2 @ 1219.2 mm (48 in.) x 2743.2 mm (108 in.)
Thickness: 15.88 mm (0.625 in.)
Installation: Screwed to studs
Fasteners: Type S bugle head drywall screws, 31.75 mm (1.25 in.) length
Fastener Spacing: 406.4 mm (16 in.) on center
Overall Weight: 73.6 kg (162.25 lbs)
Mass per Unit Area: 11.00 kg/m² (2.25 lbs/ft²)

Note: Joints and screw heads on the outermost layers of both sides of the partition were sealed with acoustical sealant and metal tape (0.23 kg (0.5 lbs) total).



NVLAP LAB CODE 100227-0

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Physical Measures

Overall Dimensions: 2.44 m (96.0 in) wide by 2.74 m (108.0 in) high
Overall Thickness: 0.13 m (5.0 in)
Overall Weight: 187.45 kg (413.25 lbs)
Transmission Area: 6.689 m² (72 ft²)
Mass per Unit Area: 28.02 kg/m² (5.74 lbs/ft²)

Test Aperture

Size: 2.74 m (9.0 ft.) by 4.27 m (14.0 ft.)
Filler Wall: Yes
Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 177.11 m³
Temperature: 22.5 °C ± 0.6 °C
Relative Humidity: 52.5 % ± 1.0 %

Receive Room

Volume: 178.33 m³
Temperature: 22.2 °C ± 0.0 °C
Relative Humidity: 53.5 % ± 1.0 %

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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Figure 1 – Specimen mounted in test opening, as viewed from source room



Figure 2 – Framing members and cavity insulation installed

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Figure 3 – Screw spacing at top of mass loaded vinyl layer



Figure 4 – Mass loaded vinyl layer installed

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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 (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	18	0.80	0	800	55	0.16	0
125	31	0.67	5	1000	58	0.13	0
160	36	0.33	3	1250	61	0.11	0
200	40	0.78	2	1600	61	0.14	0
250	41	0.36	4	2000	55	0.10	1
315	45	0.27	3	2500	52	0.08	4
400	47	0.19	4	3150	55	0.06	1
500	50	0.18	2	4000	59	0.07	0
630	52	0.17	1	5000	63	0.07	0

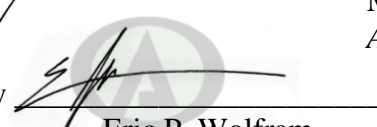
STC=52

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 = 30)
- STC = SOUND TRANSMISSION CLASS

Tested by 
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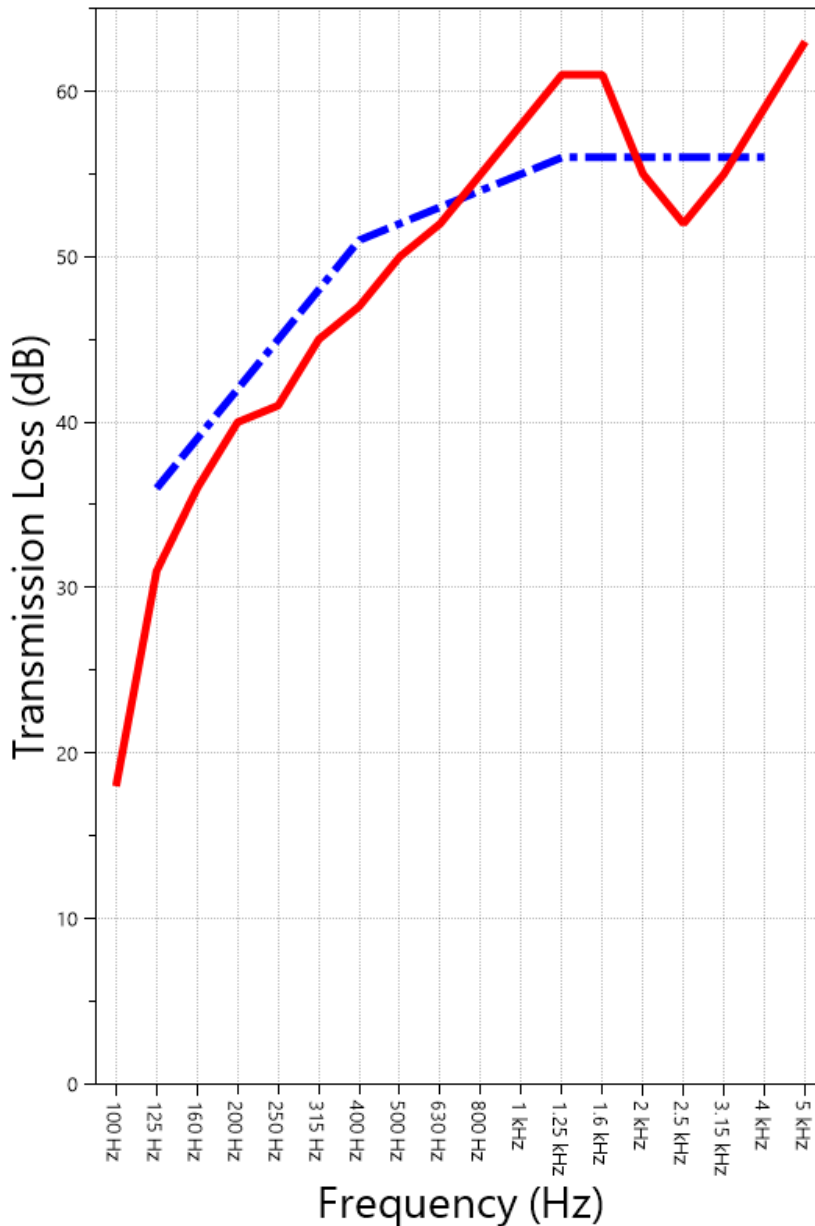
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SOUND TRANSMISSION REPORT

Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side



STC=52



TRANSMISSION LOSS
SOUND TRANSMISSION CLASS CONTOUR



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APPENDIX A: Extended Frequency Range Data

Specimen: Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side (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	16	1.45
40	20	0.74
50	16	0.96
63	13	0.60
80	11	0.54
100	18	0.80
125	31	0.67
160	36	0.33
200	40	0.78
250	41	0.36
315	45	0.27
400	47	0.19
500	50	0.18
630	52	0.17
800	55	0.16
1000	58	0.13
1250	61	0.11
1600	61	0.14
2000	55	0.10
2500	52	0.08
3150	55	0.06
4000	59	0.07
5000	63	0.07
6300	66	0.11
8000	69	0.14
10000	66	0.19
12500	61	0.30

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APPENDIX B: Instruments of Traceability

Specimen: Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side

<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 662	SD700	A083662	2017-11-20	2018-11-20
EXTECH Hygro 663	SD700	A083663	2017-11-20	2018-11-20

APPENDIX C: Revisions to Original Test Report

Specimen: Single layer insulated steel stud gypsum board wall, 0.6 lb mass loaded vinyl on source side

<u>Date</u>	<u>Revision</u>
2019-04-29	Page 2: The nominal MLV thickness was replaced with the actual measured 2.0mm thickness.

END