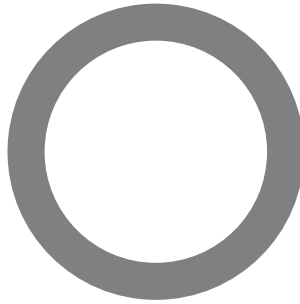


ASTM E 90: Laboratory Measurement of Airborne Sound Transmission of Building Partitions and Elements

Orfield Laboratories Inc



Design Research Testing

Acoustics / Vibration / Vision / Lighting / Architecture / Market Research

TEST

Client: Supress, LLC
Report Date: August 6, 2007
Test Date: July 9, 2007
Test Number: OL 07-0705

ACCREDITATION



For the scope of accreditation under NVLAP code 200248-0

RESULT SUMMARY

STC=53

CLIENT

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Signatures are required on this document for an official laboratory test report. Copies of this document without signatures are for reference only.

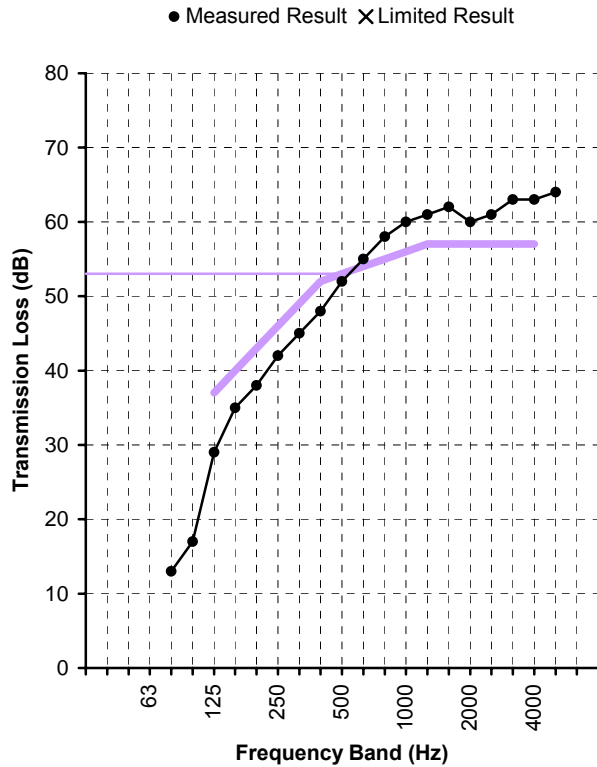




**Test Date** July 9, 2007  
**Specimen** Interior Wall Assembly

**Method** ASTM Standard E90

Single Number Rating  
**STC = 53**



Freq. (Hz)	TL (dB)	Def. (dB)
80	13	
100	17	
125	29	8
160	35	5
200	38	5
250	42	4
315	45	4
400	48	4
500	52	1
630	55	-
800	58	-
1000	60	-
1250	61	-
1600	62	-
2000	60	-
2500	61	-
3150	63	-
4000	63	-
5000	64	-

Total Deficiencies 31

\* Estimate of lower limit

**Assembly Elements** (listed in order from floor top to ceiling bottom)

- 0.625" (5/8") Supress SED 5848; 1.25" screws @ 12" O.C.
- 3-5/8" Dietrich Ultrasteel 25 gauge steel studs @ 24" O.C.
- 3-1/2" R13 glass fiber batts
- 0.625" (5/8") type X gypsum board; 1.25" screws @ 12" O.C.

Seam Treatment: tape and mud  
 Perimeter Treatment: 7/8" Mortite





## SPECIMEN DESCRIPTION

The specimen under test was interior wall assembly. The elements in the assembly are described below the results table and chart. Additional information regarding the specimen may be found in the appendices.

Test results pertain to this specimen only.

## INSTALLATION AND DISPOSITION

Independent contractors fabricated the floor-ceiling assembly in the specimen opening. Qualified representatives of Orfield Laboratories observed the installation progress, and visually inspected the specimen and seals prior to testing.

## TEST METHODS

The methods followed these published standards:

ASTM E90\*: *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413: *Classification for Rating Sound Insulation*

ASTM E2235: *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

*\* Orfield Laboratories, Inc. has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under their National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.*

## CONFIDENTIALITY

The client has full control over this information and any release of information will be only to the client. The specific testing results are deemed to be confidential exclusively for the client's use. Reproduction of this report, except in full, is prohibited.



**APPENDIX A: MEASUREMENT SETUP**

**Environment**

Temperature	70°F [21.1°C]
Relative Humidity	57%

**Specimen Area**

Specimen Area	64.5 ft² [5.99 m²]
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**Chamber Volume - Airborne Transmission**

Source Room Volume	3284 ft³ [93.0 m³]
Receiving Room Volume	8281 ft³ [234.5 m³]

**INSTRUMENTATION**

Description	Brand	Model	S/N
Microphone	Brüel & Kjær	Type 4134	1478843
Preamplifier	Brüel & Kjær	Type 2639	1202479
Microphone	Brüel & Kjær	Type 4134	558007
Preamplifier	Brüel & Kjær	Type 2639	1312237
Analyzer	Brüel & Kjær	Type 2133	1389369



**APPENDIX B: AIRBORNE CALCULATION RESULTS**

Freq. Band (Hz)	Specimen T.L. (dB)	95% Conf. (dB)	Flanking Limit (dB)	STC Defic. (dB)	R <sub>w</sub> Defic. (dB)
25					
31.5	18.0		40		
40	12.2		47		
50	14.5		43		
63	12.7		43		
80	13.0	±1.63	42		
100	16.8	±1.15	45		
125	28.9	±0.95	46	8	8.1
160	35.0	±1.27	52	5	5.0
200	37.8	±1.24	53	5	5.2
250	42.2	±0.65	56	4	3.8
315	44.8	±0.65	60	4	4.2
400	48.4	±0.62	61	4	3.6
500	51.8	±0.40	65	1	1.2
630	54.6	±0.50	66	-	-
800	58.2	±0.40	69	-	-
1000	59.6	±0.25	70	-	-
1250	61.5	±0.25	72	-	-
1600	61.7	±0.32	72	-	-
2000	59.9	±0.44	74	-	-
2500	60.6	±0.35	79	-	-
3150	63.0	±0.31	83	-	-
4000	62.9	±0.49		-	-
5000	64.2	±0.35			
6300	67.5				
8000	71.0 *				
10000	67.3 *				
Total deficiencies below STC contour (dB)				31	
STC contour [ASTM E413]				53	
Average deficiencies below R <sub>w</sub> contour (dB)					1.9
R <sub>w</sub> contour [ISO 717/1]					53

\* Actual transmission loss of specimen may be higher than measured at this frequency band. Signal-to-noise in the receiving room less than 5 dB, therefore the result is "an estimate of the lower limit".

Note: 95% Confidence from room qualification data. Flanking Limit from chamber flanking measurements. Data available upon request. Extended frequency results below 80Hz and above 5000Hz for reference only.

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**APPENDIX C: SPECIMEN ASSEMBLY DESCRIPTION**

The following table shows the elements in the floor-ceiling assembly, with the top-most element first and the bottom-most element last (from floor-top to ceiling-surface).

Overall Mass = 332.0 lb [150.6 kg]

Overall Surface Density = 5.15 PSF [25.13 kg/m<sup>2</sup>]

Element	Mass		Surf. Dens.	
	lb	[kg]	PSF	[kg/m <sup>2</sup> ]
0.625" (5/8") Supress SED 5848; 1.25" screws @ 12" O.C.	149.0	[67.6]	2.31	[11.28]
3-5/8" Dietrich Ultrasteel 25 gauge steel studs @ 24" O.C.	22.0	[10.0]	0.34	[1.67]
3-1/2" R13 glass fiber batts	17.0	[7.7]	0.26	[1.29]
0.625" (5/8") type X gypsum board; 1.25" screws @ 12" O.C.	144.0	[65.3]	2.23	[10.90]

Independent contractors constructed and installed the specimen wall assembly in the laboratory test opening. A qualified representative of Orfield Laboratories observed the installation in process and visually inspected the completed specimen and seal. All materials were weighed just before installation. Fasteners were not weighed.

Supress SED 5848 was provided by the client. All other materials were acquired by the contractors through construction material suppliers. A small sample of Supress SED 5848 was retained. The remainder of the materials were disposed of after testing.



Dietrich UltraSteel track sections were attached to the test opening at the top and bottom. Dietrich UltraSteel studs were installed vertically at 24" O.C. in the test opening. Type X gypsum boards were fastened to the receive side using 1.25" screws. The screws were placed at 12" O.C at the specimen perimeter and at 12" x 24" O.C. in the field. 3.5" R13 glass fiber batt insulation was fitted into the stud cavities. A photograph of the construction in progress is shown in **Figure 1**.



Figure 1: Installing Insulation in Stud Cavities

5/8" Supress gypsum board panels were attached to the source room side with 1.25" screws. The screws were placed at 12" O.C at the specimen perimeter and at 12" x 24" O.C. in the field. The center seams of the all gypsum board panels were sealed with tape and mud. The perimeter of each side of the specimen was sealed with 7/8" Mortite brand putty tape.

Figure 2 is a photograph of the nearly completed sample.



Figure 2: Mudding the center seam