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## SOUND TRANSMISSION TESTING CONDUCTED ON Sound Termination Clip

Pro Products  
32015 128<sup>th</sup> St. NW  
Princeton, MN 55371

Date: March 2, 2016  
Author: John Wegscheider  
Report Number: ESP022225-1

Customer PO: STC-100



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## **Sound Transmission Class Testing (ASTM E90)**

### **INTRODUCTION:**

This report presents the results of acoustical testing of a Custom Wall with Sound Termination Clips. This testing was requested by Mr. Lowell Burkstrand and was conducted on March 2, 2016

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The results stated in this report represent only the specific construction and acoustical conditions present at the time of the test. Measurements performed in accordance with this standard on nominally identical constructions and acoustical conditions may produce different results.

### **TEST RESULTS SUMMARY:**

<i>Standard Transmission Class (STC)</i>			Test Results		
Test #	Sample Identification	Insulation	STC	DEF	OITC
1	Sound Termination Clip	R-11 Fiberglass	52	32	33
2	Sound Termination Clip	R-13 Mineral Wool	52	22	31

Tabular and graphical presentations of the data are presented under "TEST RESULTS" below.

### **SPECIMEN DESCRIPTION:** (Also see "Test Results")

For this test(s) a custom wall was constructed by the client and witnessed by Element. The wall measured 108.4" x 96.5". The wall was constructed using two (2) 1 5/8" steel studs coupled together with the Sound Termination Clips (See Picture below). The studs were placed into a 3 5/8" steel stud track at the head and foot, at 24" OC, and secured with self tapping screws. One (1) layer of 5/8" Gypsum was secured to each side of the wall.

Test 1: R-11 Fiberglass was placed between studs with the seams taped.

Test 2: R-13 Mineral Wool was placed between studs; acoustical caulking was applied to the seams, and then taped.

## **TEST PROCEDURE:**

### **Sound Transmission Test**

ASTM:E90(09), "Laboratory Measurement of Airborne Sound Transmission of Building Partitions," was followed in every respect. The STC value was obtained by applying the Transmission Loss (TL) values to the STC reference contour of ASTM: E413(10), "Determination of Sound Transmission Class." The actual transmission loss at each frequency was calculated by the following equations:

$$TL = NR + 10 \log S - 10 \log A_2$$

where: TL = Transmission Loss (dB)  
 NR = Noise Reduction (dB)  
 S = Surface area common to both sides (sq. ft.)  
 A<sub>2</sub> = Sound absorption of the receiving room with the sample in place (sabins)

### **OITC Procedure**

ASTM:E1332(10), "Determination of Outdoor-Indoor Transmission Class", was followed in every respect. Basically, the OITC was calculated by using the sound transmission loss values in the 80 to 4000 Hz range as measured in accordance with ASTM E-90(09). These transmission loss data are then used to determine the A-weighted sound level reduction of the specimen for the reference source spectrum specified in Table 1 of ASTM E1332(10). The appropriate calculations were made to determine the OITC value. TL measurements were obtained in a single direction, from Source Room to the Receiving room. The source room has a volume of 2948-ft<sup>3</sup> (83-m<sup>3</sup>) and the receiving room has a volume of 5825-ft<sup>3</sup> (165-m<sup>3</sup>).

## **TEST EQUIPMENT:**

Acoustic Lab Calibrated Test Equipment For STC Tests

Item Description	ID #	Manufacturer/Model	Serial #	Calibration Due
1/2" Pressure Condenser Microphone	PT-162-075	GRAS/40AD	19220-1244	5/13/16
1/2" Pressure Condenser Microphone	PT-162-095	BSWA/MP253	450007	9/16/16
Microphone Calibrator	PT-162-076	Norsonic/1251	29144	5/12/16
Data Acquisition Module	PT-162-086	National Instruments/NI9234	154DOE4-1548E92	7/8/16
Temp and Humidity Transmitter	PT-162-077	Dwyer Instruments/Series RH	M90714-E4SV-Y	6/4/16
Temp and Humidity Transmitter	PT-162-079	Dwyer Instruments/Series RH	M93237-E09W-A	6/4/16

**Test Photo:**



Sound Termination Clip attached to 1 5/8" Stud

## Test Data:

### SOUND TRANSMISSION LOSS ASTM E90

TL Sample   
STC Contour 

#### General Information

Project No.:	ESP022225P-1
Customer:	Pro Products
Test Date:	03-02-2016
Specimen ID:	Sound Termination Clip
Specimen Description:	R-11 Fiberglass Insulation
	108.40" W x 96.50" H - 72.64 ft²
Specimen (depth-weight):	" - lbs
Operator:	PAD

#### Data Table

	TL (dB)	deficiencies	95% CI
80	18	-	2.89
100	18	-	1.54
125	33	3	2.19
160	35	4	1.53
200	40	2	0.93
250	45	0	0.81
315	45	3	0.76
400	48	3	0.49
500	51	1	0.44
630	54	0	0.53
800	56	0	0.42
1000	58	0	0.48
1250	58	0	0.74
1600	57	0	0.43
2000	50	6	0.32
2500	49	7	0.33
3150	53	3	0.38
4000	58	0	0.25
5000	60 #	-	0.39

#### Source Room

Temperature

21.7 °C

R.H.

43 %

#### Receive Room

Temperature

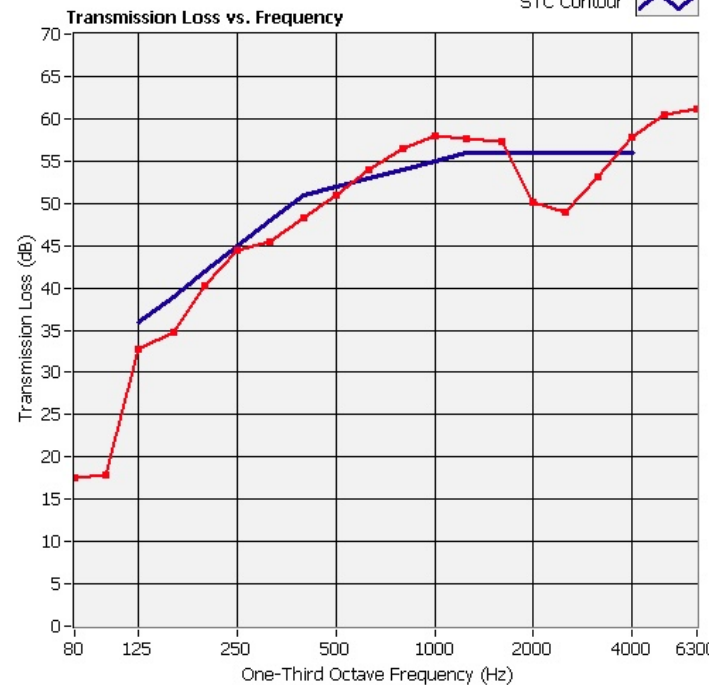
21.5 °C

R.H.

42 %

ATM

983 hPa



STC Rating

**52**

deficiencies

**32**

OITC

**33**

# background < 5.0 below receive room

\* 95% Confidence Interval exceeded

## SOUND TRANSMISSION LOSS ASTM E90

### General Information

Project No.:	ESP022225P-2
Customer:	Pro Products
Test Date:	03-02-2016
Specimen ID:	Sound Termination Clip
Specimen Description:	with Acoustical Insulation
	108.40" W x 96.50" H - 72.64 ft²
Specimen (depth-weight):	" - lbs
Operator:	PAD

### Data Table

	TL (dB)	deficiencies	95% CI
80	15	-	2.96
100	16	-	1.95
125	30	6	2.18
160	35	4	1.62
200	42	0	0.92
250	45	0	0.91
315	46	2	0.55
400	49	2	0.58
500	51	1	0.60
630	55	0	0.39
800	57	0	0.44
1000	57	0	0.82
1250	53	3	0.68
1600	57	0	0.81
2000	55	1	0.35
2500	53	3	0.44
3150	56	0	0.43
4000	59	0	0.73
5000	61 #	-	0.70

### Source Room

Temperature  
21.7 °C  
R.H.  
43 %

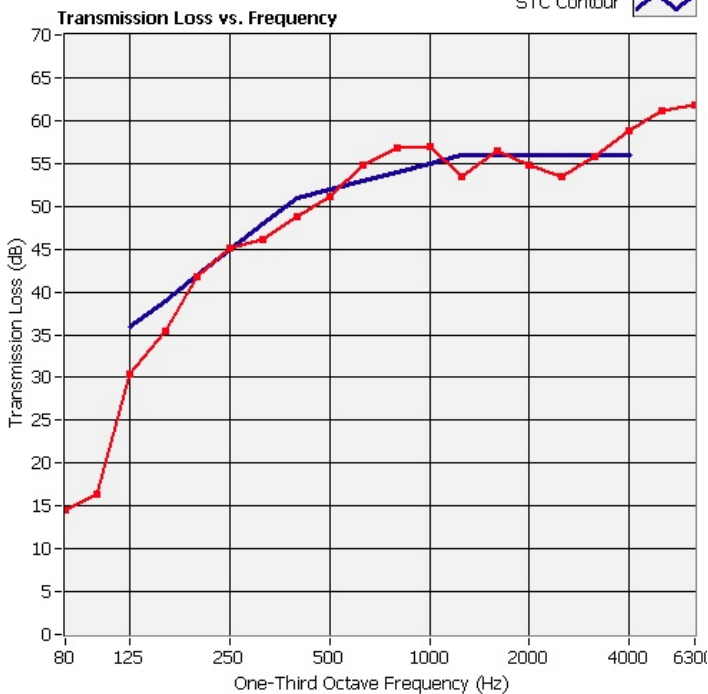
### Receive Room

Temperature  
21.7 °C  
R.H.  
44 %

### ATM

982 hPa

TL Sample   
STC Contour 



STC Rating

**52**

deficiencies

**22**

OITC

**31**

# background < 5.0 below receive room

\* 95% Confidence Interval exceeded



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