



**G0911.02-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E90**

Rendered to:

UNITED PLASTICS CORPORATION

SERIES/MODEL: dB-4Pro Wall

TYPE: Metal Stud Wall Assembly

DATA FILE NO.: G0911.01B

STC: 50

OITC: 34

Test Specimen Identification: (Source to Receive Room)

Gypsum Board: One Layer, 5/8" Type X
dB Material: dB-4Pro Wall
Gypsum Board: One Layer, 5/8" Type X
Studs: 3-5/8" 20 Gauge Steel, 16" Centers
Insulation: R-13 Fiberglass
Gypsum Board: One Layer, 5/8" Type X

Reference should be made to Intertek-ATI Report No. G0911.02-113-11 for complete test specimen description. This page alone is not a complete report. Flanking limit tests and reference specimen tests are available upon request.



Acoustical Performance Test Report

UNITED PLASTICS CORPORATION
511 Hay Street
Mount Airy, North Carolina 27030

Report No	G0911.02-113-11
Test Date	08/01/16
Report Date	08/15/16
Specimen Construction Date	08/01/16

Project Scope

Architectural Testing, Inc., an Intertek company ("Intertek-ATI"), was contracted to conduct a sound transmission loss test. The complete test data is included as Appendix B of this report. The client provided the test specimen.

Test Methods

Testing for this project was conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

ASTM E413-10, Classification for Rating Sound Insulation

ASTM E1332-10a, Standard Classification for Rating Outdoor-Indoor Sound Attenuation

ASTM E2235-04 (2012), Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

Test Procedure

All measurements were conducted in the HT test chambers at Intertek-ATI located in York, Pennsylvania. The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement. Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure levels were made simultaneously in the receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Specimen Installation

The specimen was constructed in the laboratory. A sound transmission loss test was initially performed on a filler wall. The 96" wide by 96" high specimen plug was removed from the filler wall assembly. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing.

Test Calculations

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating

To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

Test Specimen Materials (Source Room to Receive Room)

Material	Actual Dimensions (inches)	Actual Thickness (inches)	Manufacturer and Series	Quantity	Average Weight
Gypsum Board	48 by 96	0.625	National Gypsum Type X	2 sheets	2.5 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter, joints, and screw heads sealed with acoustical sealant and foil tape.</i>				
dB-4Pro	36 by 96	0.140	Client supplied the product, dB-4Pro	3	0.84 lbs/ft
Gypsum Board	48 by 96	0.625	National Gypsum Type X	2 sheets	2.5 lbs/ft ²
	<i>Note: Screws spaced on 24" centers. Perimeter, joints, and screw heads sealed with acoustical sealant and foil tape.</i>				
Stud	3-5/8 by 96	3-5/8	Steel, 20 Gauge (equivalent, 19 mil)	7 pieces	0.425 lbs linear ft
	<i>Note: 16" centers. Screwed to top and bottom plates.</i>				
Insulation	16 by 96	3.5	R-13 Fiberglass Insulation	6 batts	0.25 lbs/ft ²
	<i>Note: N/A</i>				
Gypsum Board	48 by 96	0.625	National Gypsum Type X	2 sheets	2.5 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter, joints, and screw heads sealed with acoustical sealant and foil tape.</i>				
Top Plates	3-5/8 by 96	4	Steel, 20 Gauge (equivalent, 19 mil)	1 piece	0.410 lbs/linear ft
	<i>Note: N/A</i>				
Bottom Plates	3-5/8 by 96	4	Steel, 20 Gauge (equivalent, 19 mil)	1 piece	0.410 lbs/linear ft
	<i>Note: N/A</i>				

N/A-Not Applicable

Comments

The client did not supply a report drawing of the test specimen. Intertek-ATI will store samples of test specimens for four years.

Intertek-ATI will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

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For INTERTEK-ATI:

Amanda N. Smith
Technician - Acoustical Testing

Kurt A. Golden
Project Lead – Acoustical Testing

ANS:jmcs

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Equipment description (1)

Appendix B: Complete test results (2)

Appendix C: Photographs (1)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
R0	08/15/18	N/A	Original Report Issue



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Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition card	65126	05/16 *
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65968	12/15
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	12/15
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	65103	12/15
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	12/15
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64906	12/15
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/15
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/15
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/15
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/15
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	12/15
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	03/16
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/16
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	65105	05/16

*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

Test Chamber:

	Volume	Description
Receive Room	234 m ³ (8291.3 ft ³)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m ³ (7296.3 ft ³)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Not Applicable



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Appendix B

Complete Test Results



AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	08/01/16						
Data File No.	G0911.01B						
Client	United Plastics Corporation						
Description	Series/Model: dB-4Pro Wall, Metal Stud Wall Assembly #2, with one layer 5/8" Type X gypsum board, dB4 one layer, one layer 5/8" Type X gypsum board, 3-5/8" 20 gauge (equivalent, 19 mil) steel studs at 16" centers, R-13 fiberglass insulation, one layer 5/8" Type X gypsum board						
Specimen Area	5.95 m ²	Receive Temp.	20.7 °C		Source Temp.	20.7 °C	
Technician	Amanda N. Smit	Receive Humidity	53%		Source Humidity	51%	

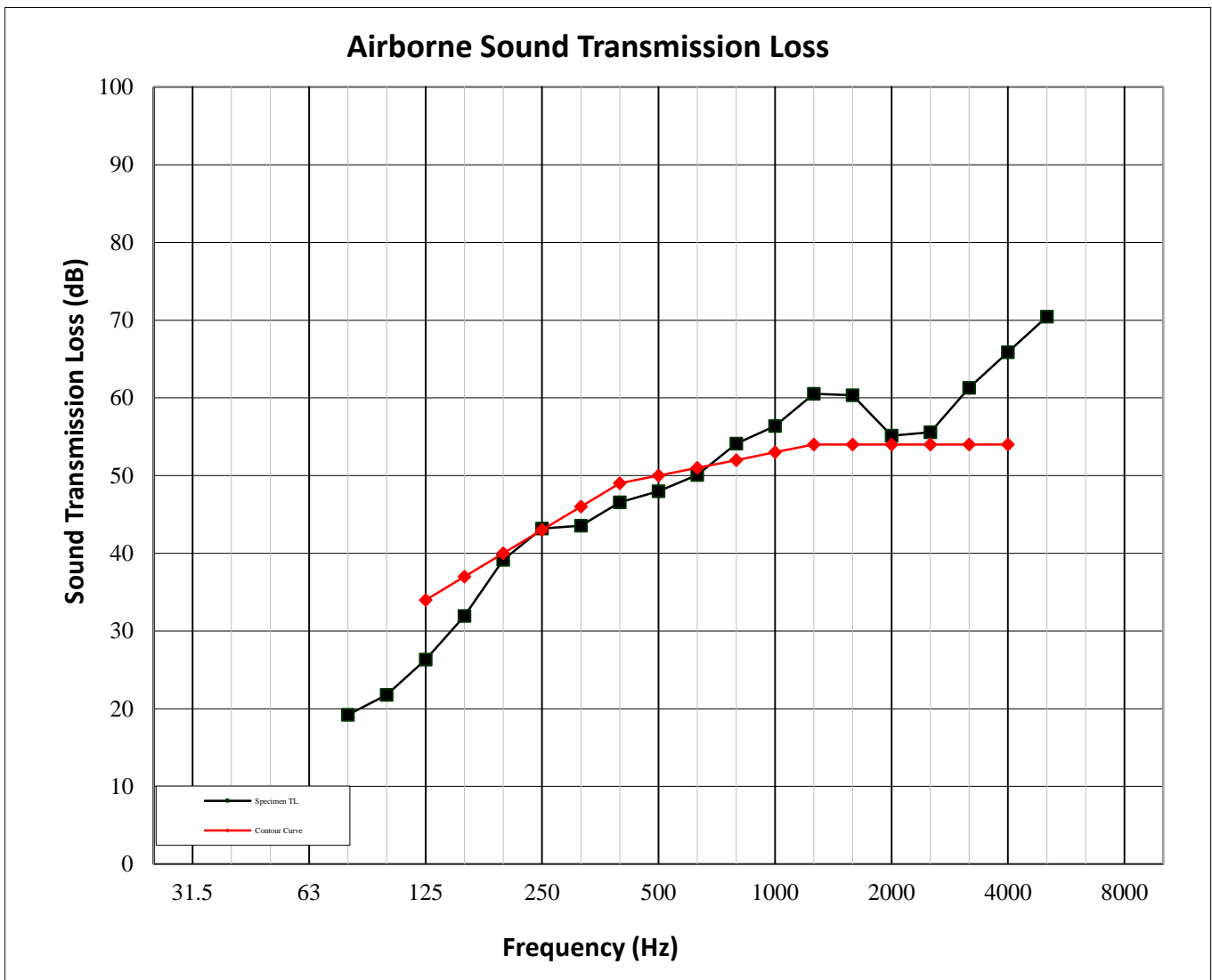
Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	37.7	4.8	105	86	19.2	1.37	-
100	36.8	5.9	104	82	21.8	1.81	-
125	39.4	5.8	104	78	26.3	1.49	8
160	41.5	4.9	105	74	31.9	0.76	5
200	41.7	4.8	105	67	39.2	1.03	1
250	37.0	5.4	106	63	43.2	0.91	0
315	30.9	5.8	99	56	43.5	0.26	2
400	26.6	6.0	98	51	46.6	0.21	2
500	23.8	5.9	98	50	48.0	0.29	2
630	21.5	5.6	100	50	50.1	0.28	1
800	20.0	5.9	99	45	54.1	0.44	0
1000	17.3	6.1	97	40	56.4	0.30	0
1250	16.8	6.8	98	37	60.5	0.32	0
1600	12.9	7.2	103	42	60.3	0.22	0
2000	9.0	7.7	95	39	55.2	0.24	0
2500	7.6	8.6	93	36	55.6	0.16	0
3150	7.5	10.3	95	31	61.3	0.32	0
4000	7.6	12.6	94	25	65.9	0.24	0
5000	8.9	16.4	93	18	70.5	0.44	-

STC Rating **50** *(Sound Transmission Class)*
Deficiencies **21** *(Sum of Deficiencies)*
OITC Rating **34** *(Outdoor-Indoor Transmission Class)*

- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	08/01/16					
Data File No.	G0911.01B					
Client	United Plastics Corporation					
Description	Series/Model: dB-4Pro Wall, Metal Stud Wall Assembly #2, with one layer 5/8" Type X gypsum board, dB4 one layer, one layer 5/8" Type X gypsum board, 3-5/8" 20 gauge (equivalent, 19 mil) steel studs at 16" centers, R-13 fiberglass insulation, one layer 5/8" Type X gypsum board					
Specimen Area	5.95 m ²	Receive Temp.	20.7 °C		Source Temp.	20.7 °C
Technician	Amanda N. Smit	Receive Humidity	53%		Source Humidity	51%



Appendix C

Photographs



Receive Room View of Installed Specimen



Source Room View of Installed Specimen