



NVLAP LAB CODE 100228-0



ARMSTRONG
ACOUSTICS
LABORATORY

Armstrong World Industries
Innovation Center, P. O. Box 3001
Lancaster, PA 17604
717 396-6225

SOUND ABSORPTION TEST REPORT

Test Number: A-55221-0228

Report Issued: 4/3/2008

Test Date: 3/19/2008

For: Armstrong World Industries Inc.
2500 Columbia Avenue
Lancaster, PA 17604

Specimen Designation: Armstrong Item 5441 and Item 5442 – SoundScapes Shapes Convex and Concave

The test method conforms explicitly to the requirements of ISO 354-03 – “Acoustics - Measurement of sound absorption in a reverberation room”. The Armstrong Acoustics Laboratory is accredited by NVLAP of the Department of Commerce as having the competence to perform this test in accordance with the prescribed test method. A description of the facility and measuring technique is available separately.

Substrate: Fiberglass

Face Finish: Factory-applied acrylic latex paint on DuraBrite acoustically transparent membrane

Back Finish: None

Nominal Unit Size: 1.2 m x 1.2 m x 22 mm (48” x 48” x 7/8”)

Physical Unit Size: See attached drawings.

Unit Weight per Area: 3.32 kg/m², (0.68 lb/ft²)

Sample Size: 5.35 m², (57.7 ft²) array consisting of four panels, two of Item 5441 and two of Item 5442 with 100mm, (4 inch) between adjacent panels.

Conditioning: The test was performed in a test room at 21.9 deg C, (71.4 deg F), and 55.3 %RH. The conditions during the bare room test were at 21.8 deg C, (71.2 deg F), and 57.5 %RH. The sample was conditioned at least 20 hours at 21+/-3 deg C, (70+/-5 deg F), and 50+/-5% RH.

Specimen Installation: The specimens were mounted 1.0 meter above the test surface using 13mm wooden dowel rods inserted in a grid of wood strips laying on the floor.

Reverberation Room

Size: 8.18 x 6.22 x 5.23 m, (26.83’ x 20.40’ x 17.17’) with
2.44 x 2.44 x 0.29 m, (8’ x 8’ x 0.95’) recess in ceiling and
2.93 x 0.70 x 0.53 m, (9.60’ x 2.31’ x 1.75’) box for collapsed test frame.

Volume: 266.7 m³, (9420 ft³)

Surface Area: 255 m², (2747 ft²)

Diffuser Configuration: One rotating diffuser system which consists of a conical section extending from floor to ceiling and 3 flat diffusers mounted about the axis of the cone. The area of the diffuser is 42.9 m² (461 ft²).

Microphone Positions: 6

Noise Source: Two speaker cabinets in opposite upper trihedral corners broadcasting broadband Pink noise (50 Hz – 10,000 Hz).



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The results reported above apply to the specific samples tested.

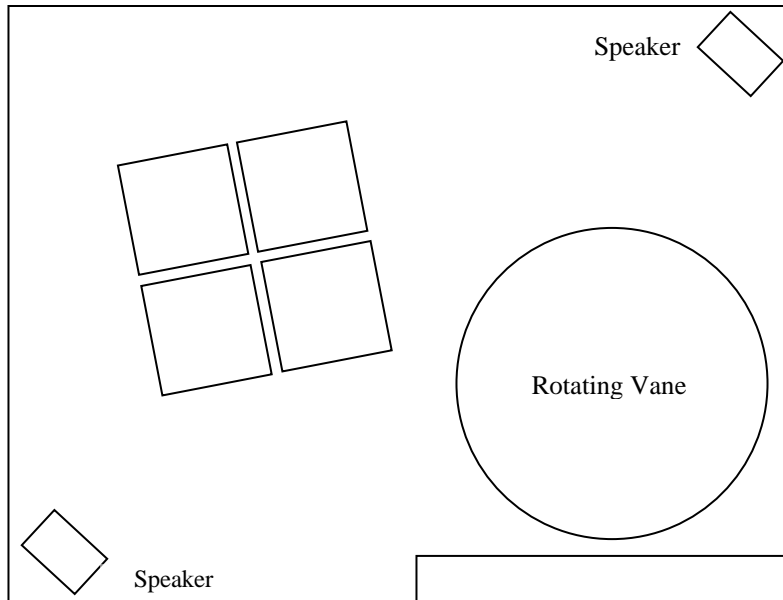
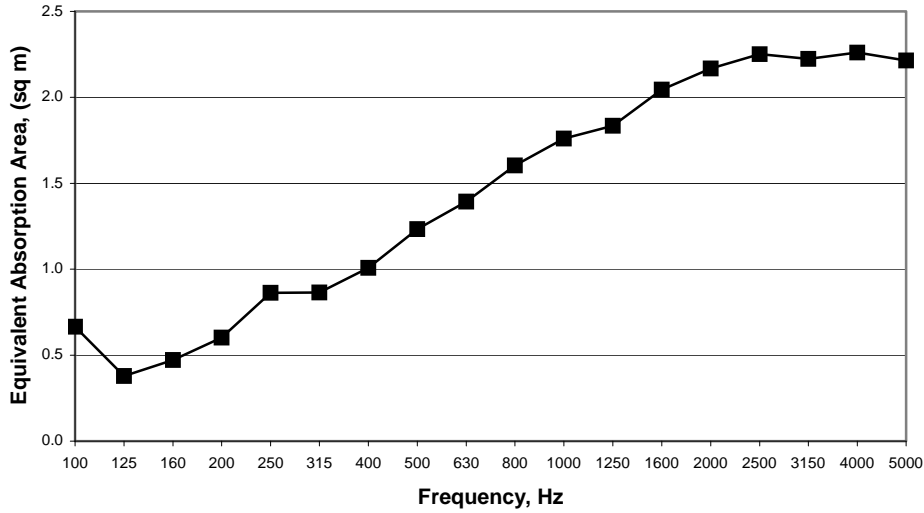
No responsibility is assumed for performance of any other specimen.

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Equivalent Absorption Area - Alpha (obj)



Room Layout and Sample Position

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Results According to ISO 354-03

Frequency Hz	T1 Treated Room Reverberation Time (Seconds)	T2 Bare Room Reverberation Time (Seconds)	Equivalent Absorption Area α_{obj}	α_{obj} Estimated 95% Confidence Limit
100	4.3	5.9	0.7	0.05
125	4.8	5.7	0.4	0.04
160	4.6	5.9	0.5	0.04
200	4.6	6.2	0.6	0.03
250	4.2	6.4	0.9	0.03
315	4.2	6.5	0.9	0.03
400	4.1	6.8	1.0	0.02
500	3.8	6.7	1.2	0.02
630	3.4	6.1	1.4	0.02
800	3.1	5.7	1.6	0.02
1000	2.8	5.3	1.8	0.01
1250	2.6	4.6	1.8	0.01
1600	2.3	4.2	2.0	0.01
2000	2.1	3.7	2.2	0.01
2500	1.9	3.3	2.3	0.01
3150	1.9	3.0	2.2	0.01
4000	1.7	2.7	2.3	0.00
5000	1.5	2.3	2.2	0.00

The relative standard deviation of the reverberation times are calculated as outlined in section 8.2.2 of ISO. The presented uncertainty is the root of the sum of squares for the bare and treated room reverberation times multiplied by the absorption.



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Comments:

Traceability: These test results are traceable to NIST.

Approved by:

Robert Alan Hallman
Facility Manager



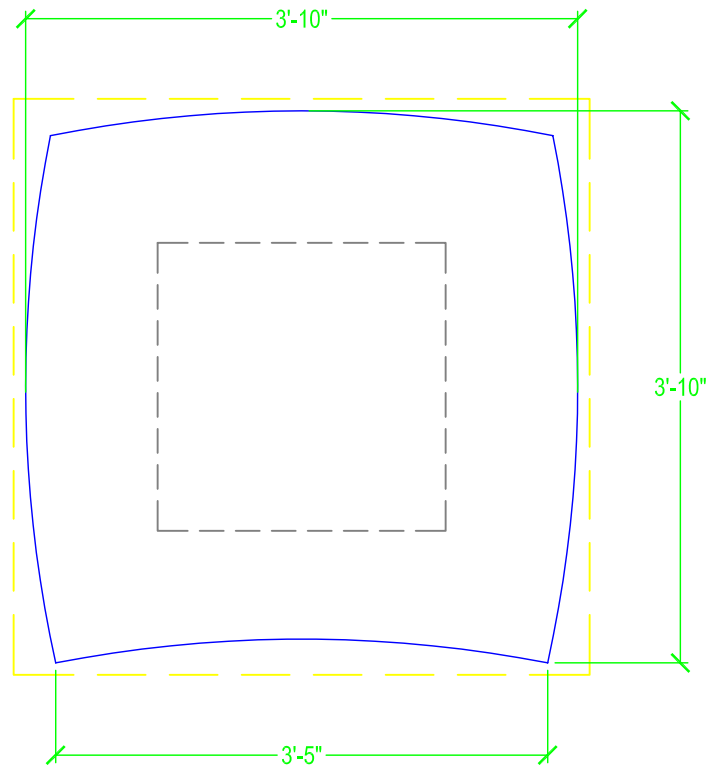
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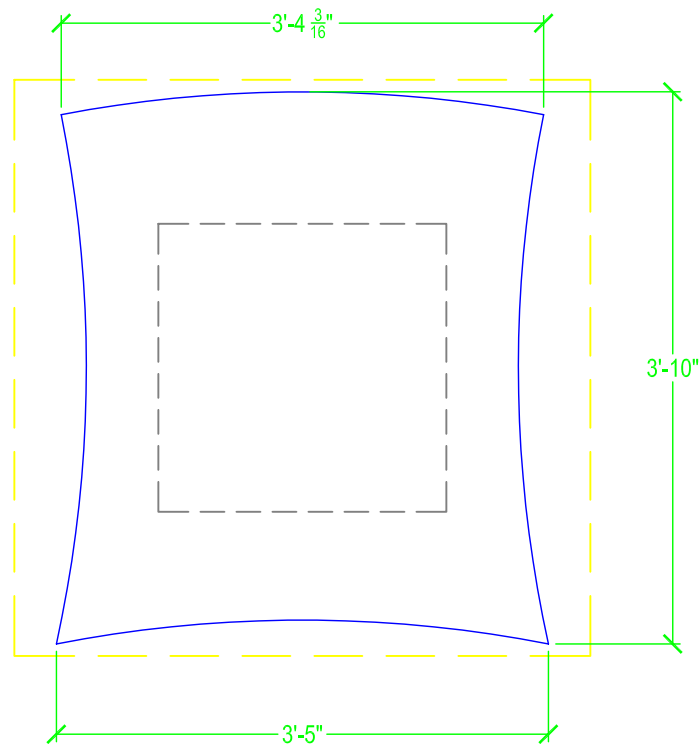
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PROJECT NAME:		CONVEX- NOMINAL 4' X 4' SHAPE	
DWG. NO. ITEM # 5441		REV:	DATE:
DATE: 11/01/07	SCALE: 1:16	DESC.:	
DRAWN BY: CAD	CHK BY:		



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PROJECT NAME: CONCAVE - NOMINAL 4' X 4' SHAPE			
DWG. NO. ITEM # 5442		REV:	DATE:
DATE: 11/01/07	SCALE: 1:16	DESC.:	
DRAWN BY: CAD	CHK BY:		



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