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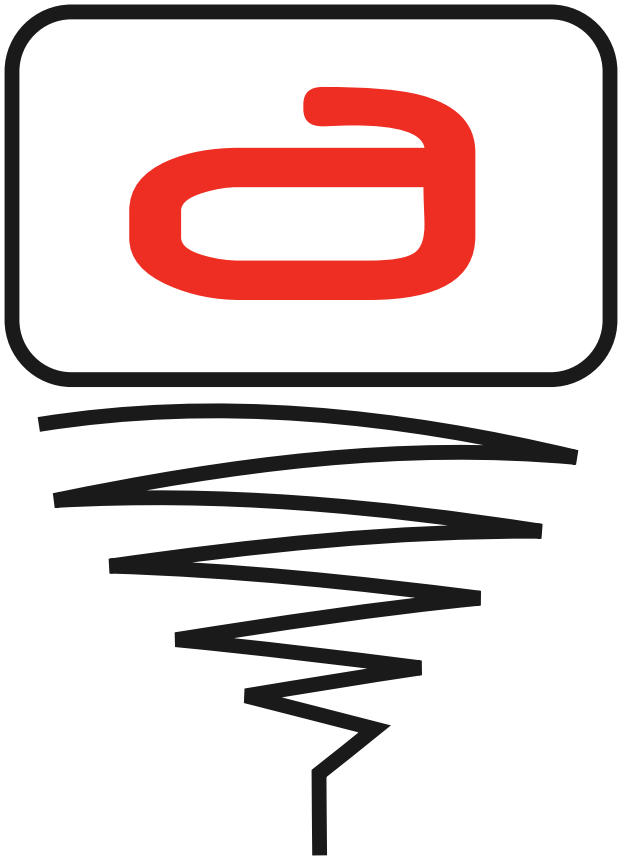
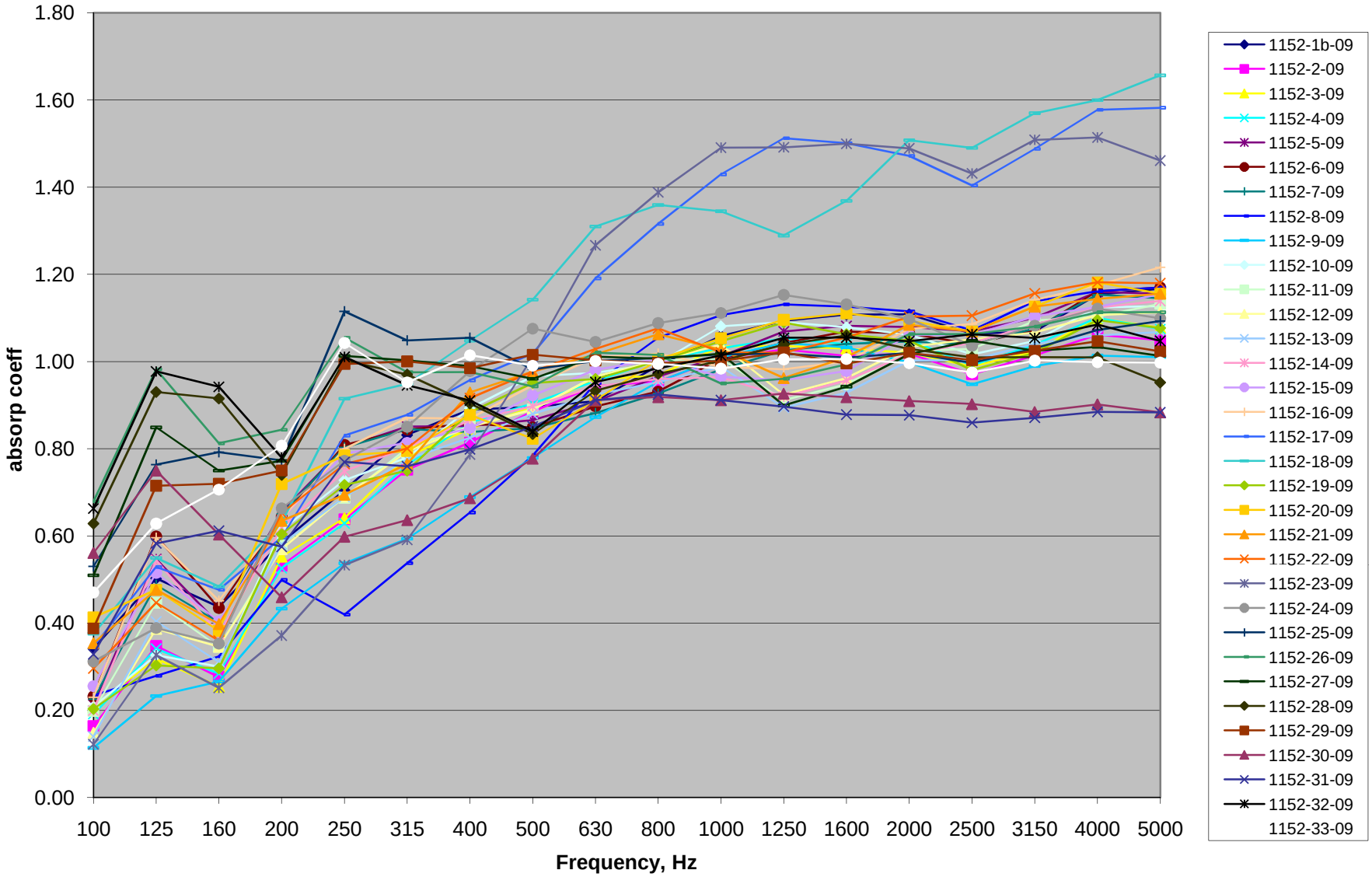


2009 acouStac Reverberation Tests


absorp coeff
1.80
1.60
1.40
1.20
1.00
0.80
0.60
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0.20
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100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
Frequency, Hz
1152-1b-09
1152-2-09
1152-3-09
1152-4-09
1152-5-09
1152-6-09
1152-7-09
1152-8-09
1152-9-09
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1152-26-09
1152-27-09
1152-28-09
1152-29-09
1152-30-09
1152-31-09
1152-32-09
1152-33-09

Test Log

		Frequency	Curtain Construction							
Test #	Test Report #	200	Fabric	Segment Width, in	Clip Width, in	Clip Density	Dist from Wall, in	# of Panels	Gap bet. Curtains, in	Case
26	1152-26-09	0.84	Wool	11.00	6.00	Std	15.00	1	N/A	Y
33	1152-33-09	0.81	Wool	15.00	3.00	Std	6.00	1	N/A	Y
32	1152-32-09	0.78	Wool	15.00	3.00	Std	15.00	1	N/A	Y
25	1152-25-09	0.77	Wool	11.00	3.00	Dense	6.00	1	N/A	Y
27	1152-27-09	0.77	Wool	11.00	6.00	Std	6.00	1	N/A	Y
29	1152-29-09	0.75	Wool	11.00	3.00	Std	6.00	1	N/A	Y
28	1152-28-09	0.74	Wool	11.00	3.00	Std	15.00	1	N/A	Y
20	1152-20-09	0.72	Wool	11.00	3.00	Std	15.00	1	N/A	N
24	1152-24-09	0.66	Wool	11.00	3.00	Dense	6.00	1	N/A	N
5	1152-5-09	0.65	Wool	11.00	3.00	Std	15.00	2	12.00	N
22	1152-22-09	0.65	Wool	11.00	6.00	Std	15.00	1	N/A	N
7	1152-7-09	0.65	Wool	11.00	3.00	Std	15.00	2	0.00	N
6	1152-6-09	0.64	Wool	11.00	3.00	Std	15.00	2	6.00	N
15	1152-15-09	0.64	Wool	11.00	6.00	Std	15.00	2	6.00	N
16	1152-16-09	0.64	Wool	11.00	6.00	Std	15.00	2	12.00	N
21	1152-21-09	0.63	Wool	11.00	6.00	Std	6.00	1	N/A	N
18	1152-18-09	0.63	Wool	11.00	6.00	Std	Middle of Rm	1	N/A	N
14	1152-14-09	0.62	Wool	11.00	6.00	Std	15.00	2	0.00	N
10	1152-10-09	0.61	Wool	15.00	3.00	Std	6.00	1	N/A	N
19	1152-19-09	0.60	Wool	11.00	3.00	Std	6.00	1	N/A	N
17	1152-17-09	0.60	Wool	11.00	3.00	Std	Middle of Rm	1	N/A	N
1	1152-1b-09	0.58	Wool	15.00	3.00	Std	15.00	1	N/A	N
13	1152-13-09	0.58	Wool	11.00	6.00	Std	6.00	2	0.00	N
11	1152-11-09	0.58	Wool	11.00	6.00	Std	6.00	2	6.00	N
31	1152-31-09	0.58	Velour	11.00	3.00	Std	6.00	1	N/A	Y
12	1152-12-09	0.57	Wool	11.00	6.00	Std	6.00	2	12.00	N
3	1152-3-09	0.55	Wool	11.00	3.00	Std	6.00	2	6.00	N
2	1152-2-09	0.53	Wool	11.00	3.00	Std	6.00	2	0.00	N
4	1152-4-09	0.53	Wool	11.00	3.00	Std	6.00	2	12.00	N
8	1152-8-09	0.50	Velour	11.00	3.00	Std	15.00	1	N/A	N
30	1152-30-09	0.46	Velour	11.00	3.00	Std	15.00	1	N/A	Y
9	1152-9-09	0.43	Velour	11.00	3.00	Std	6.00	1	N/A	N
23	1152-23-09	0.37	Velour	11.00	3.00	Std	Middle of Rm	1	N/A	N

-> IAC Test Report 76-0073-01
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-> IAC Test Report 76-0073-11
-> IAC Test Report 76-0073-12
-> IAC Test Report 76-0073-13
-> IAC Test Report 76-0073-14
-> IAC Test Report 76-0073-15

Test Log

		Frequency	Curtain Construction							
Test #	Test Report #	800	Fabric	Segment Width, in	Clip Width, in	Clip Density	Dist from Wall, in	# of Panels	Gap bet. Curtains, in	Case
23	1152-23-09	1.39	Velour	11.00	3.00	Std	Middle of Rm	1	N/A	N
18	1152-18-09	1.36	Wool	11.00	6.00	Std	Middle of Rm	1	N/A	N
17	1152-17-09	1.32	Wool	11.00	3.00	Std	Middle of Rm	1	N/A	N
24	1152-24-09	1.09	Wool	11.00	3.00	Dense	6.00	1	N/A	N
22	1152-22-09	1.08	Wool	11.00	6.00	Std	15.00	1	N/A	N
21	1152-21-09	1.06	Wool	11.00	6.00	Std	6.00	1	N/A	N
8	1152-8-09	1.05	Velour	11.00	3.00	Std	15.00	1	N/A	N
16	1152-16-09	1.02	Wool	11.00	6.00	Std	15.00	2	12.00	N
26	1152-26-09	1.02	Wool	11.00	6.00	Std	15.00	1	N/A	Y
25	1152-25-09	1.01	Wool	11.00	3.00	Dense	6.00	1	N/A	Y
27	1152-27-09	1.01	Wool	11.00	6.00	Std	6.00	1	N/A	Y
15	1152-15-09	1.01	Wool	11.00	6.00	Std	15.00	2	6.00	N
20	1152-20-09	1.00	Wool	11.00	3.00	Std	15.00	1	N/A	N
4	1152-4-09	1.00	Wool	11.00	3.00	Std	6.00	2	12.00	N
11	1152-11-09	1.00	Wool	11.00	6.00	Std	6.00	2	6.00	N
12	1152-12-09	1.00	Wool	11.00	6.00	Std	6.00	2	12.00	N
19	1152-19-09	1.00	Wool	11.00	3.00	Std	6.00	1	N/A	N
29	1152-29-09	1.00	Wool	11.00	3.00	Std	6.00	1	N/A	Y
10	1152-10-09	1.00	Wool	15.00	3.00	Std	6.00	1	N/A	N
33	1152-33-09	0.99	Wool	15.00	3.00	Std	6.00	1	N/A	Y
1	1152-1b-09	0.99	Wool	15.00	3.00	Std	15.00	1	N/A	N
32	1152-32-09	0.98	Wool	15.00	3.00	Std	15.00	1	N/A	Y
28	1152-28-09	0.97	Wool	11.00	3.00	Std	15.00	1	N/A	Y
3	1152-3-09	0.97	Wool	11.00	3.00	Std	6.00	2	6.00	N
5	1152-5-09	0.97	Wool	11.00	3.00	Std	15.00	2	12.00	N
14	1152-14-09	0.96	Wool	11.00	6.00	Std	15.00	2	0.00	N
2	1152-2-09	0.95	Wool	11.00	3.00	Std	6.00	2	0.00	N
9	1152-9-09	0.95	Velour	11.00	3.00	Std	6.00	1	N/A	N
13	1152-13-09	0.95	Wool	11.00	6.00	Std	6.00	2	0.00	N
6	1152-6-09	0.93	Wool	11.00	3.00	Std	15.00	2	6.00	N
7	1152-7-09	0.93	Wool	11.00	3.00	Std	15.00	2	0.00	N
31	1152-31-09	0.92	Velour	11.00	3.00	Std	6.00	1	N/A	Y
30	1152-30-09	0.92	Velour	11.00	3.00	Std	15.00	1	N/A	Y

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-> IAC Test Report 76-0073-11
-> IAC Test Report 76-0073-12
-> IAC Test Report 76-0073-13
-> IAC Test Report 76-0073-14
-> IAC Test Report 76-0073-15

Test Log

		Frequency	Curtain Construction							
Test #	Test Report #	3150	Fabric	Segment Width, in	Clip Width, in	Clip Density	Dist from Wall, in	# of Panels	Gap bet. Curtains, in	Case
18	1152-18-09	1.57	Wool	11.00	6.00	Std	Middle of Rm	1	N/A	N
23	1152-23-09	1.51	Velour	11.00	3.00	Std	Middle of Rm	1	N/A	N
17	1152-17-09	1.49	Wool	11.00	3.00	Std	Middle of Rm	1	N/A	N
22	1152-22-09	1.16	Wool	11.00	6.00	Std	15.00	1	N/A	N
16	1152-16-09	1.14	Wool	11.00	6.00	Std	15.00	2	12.00	N
8	1152-8-09	1.14	Velour	11.00	3.00	Std	15.00	1	N/A	N
21	1152-21-09	1.13	Wool	11.00	6.00	Std	6.00	1	N/A	N
20	1152-20-09	1.13	Wool	11.00	3.00	Std	15.00	1	N/A	N
15	1152-15-09	1.10	Wool	11.00	6.00	Std	15.00	2	6.00	N
5	1152-5-09	1.10	Wool	11.00	3.00	Std	15.00	2	12.00	N
11	1152-11-09	1.09	Wool	11.00	6.00	Std	6.00	2	6.00	N
14	1152-14-09	1.08	Wool	11.00	6.00	Std	15.00	2	0.00	N
24	1152-24-09	1.08	Wool	11.00	3.00	Dense	6.00	1	N/A	N
26	1152-26-09	1.08	Wool	11.00	6.00	Std	15.00	1	N/A	Y
7	1152-7-09	1.08	Wool	11.00	3.00	Std	15.00	2	0.00	N
6	1152-6-09	1.07	Wool	11.00	3.00	Std	15.00	2	6.00	N
1	1152-1b-09	1.07	Wool	15.00	3.00	Std	15.00	1	N/A	N
12	1152-12-09	1.07	Wool	11.00	6.00	Std	6.00	2	12.00	N
32	1152-32-09	1.05	Wool	15.00	3.00	Std	15.00	1	N/A	Y
10	1152-10-09	1.05	Wool	15.00	3.00	Std	6.00	1	N/A	N
13	1152-13-09	1.04	Wool	11.00	6.00	Std	6.00	2	0.00	N
4	1152-4-09	1.04	Wool	11.00	3.00	Std	6.00	2	12.00	N
25	1152-25-09	1.03	Wool	11.00	3.00	Dense	6.00	1	N/A	Y
27	1152-27-09	1.02	Wool	11.00	6.00	Std	6.00	1	N/A	Y
29	1152-29-09	1.02	Wool	11.00	3.00	Std	6.00	1	N/A	Y
3	1152-3-09	1.02	Wool	11.00	3.00	Std	6.00	2	6.00	N
19	1152-19-09	1.02	Wool	11.00	3.00	Std	6.00	1	N/A	N
2	1152-2-09	1.01	Wool	11.00	3.00	Std	6.00	2	0.00	N
28	1152-28-09	1.01	Wool	11.00	3.00	Std	15.00	1	N/A	Y
33	1152-33-09	1.00	Wool	15.00	3.00	Std	6.00	1	N/A	Y
9	1152-9-09	0.99	Velour	11.00	3.00	Std	6.00	1	N/A	N
30	1152-30-09	0.88	Velour	11.00	3.00	Std	15.00	1	N/A	Y
31	1152-31-09	0.87	Velour	11.00	3.00	Std	6.00	1	N/A	Y

-> IAC Test Report 76-0073-01
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-> IAC Test Report 76-0073-13
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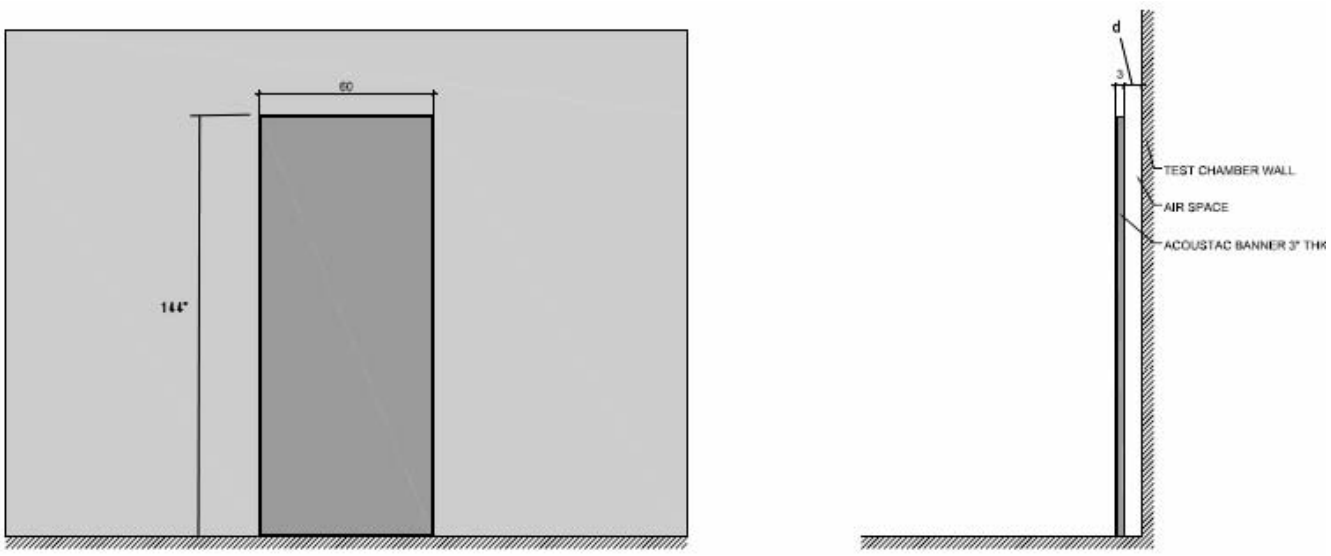
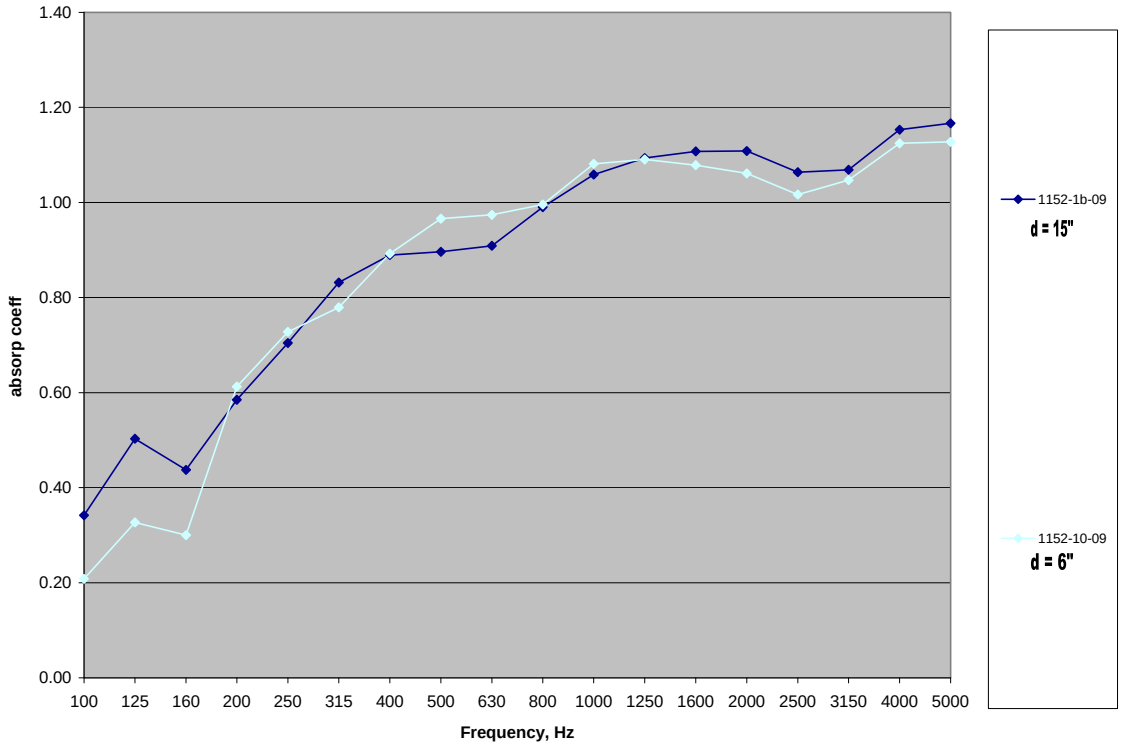
acouStaCorp

Test 76007301: One 3” thick ACOUSTAC Wool Banner (15” segments) hung parallel to a wall



Notes:
1) 3” thk Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Industrial Acoustics Company
Aero-Acoustic Laboratories

Accredited by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, **NATIONAL VOLUNTARY LAB ACCREDITATION PROGRAM** (Lab code 100404-0) FOR ACOUSTICAL TESTING SERVICES (selected test methods)

Laboratory Report No : 76-0073-01 **Date:** 7/7/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (15" segments) hung parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung parallel to one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimen and into the space behind it.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 15" along the height of the specimen. At each seam between 15" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 15" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 31 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (15" segments) hung parallel to a wall.

Freq. Hz	Specimen Distance from Wall	
	6" [5]	15" [6]
	Absorption Coefficient	
50	0.17	-0.12
63	0.20	0.12
80	0.08	0.29
100	0.21	0.34
125	0.33	0.50
160	0.30	0.44
200	0.61	0.58
250	0.73	0.70
315	0.78	0.83
400	0.89	0.89
500	0.97	0.90
630	0.97	0.91
800	1.00	0.99
1000	1.08	1.06
1250	1.09	1.09
1600	1.08	1.11
2000	1.06	1.11
2500	1.02	1.06
3150	1.05	1.07
4000	1.12	1.15
5000	1.13	1.17
6300	1.17	1.17
8000	1.24	1.15
10000	1.32	1.16
NRC[1]	0.95	0.95
SAA[2]	0.94	0.94
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	74/74	74/74
Humid (%)	56/56	58/58
BP (%)	30.2/30.2	30.38/30.38

[1]Noise Reduction Coefficient, NRC, per ASTM C423.

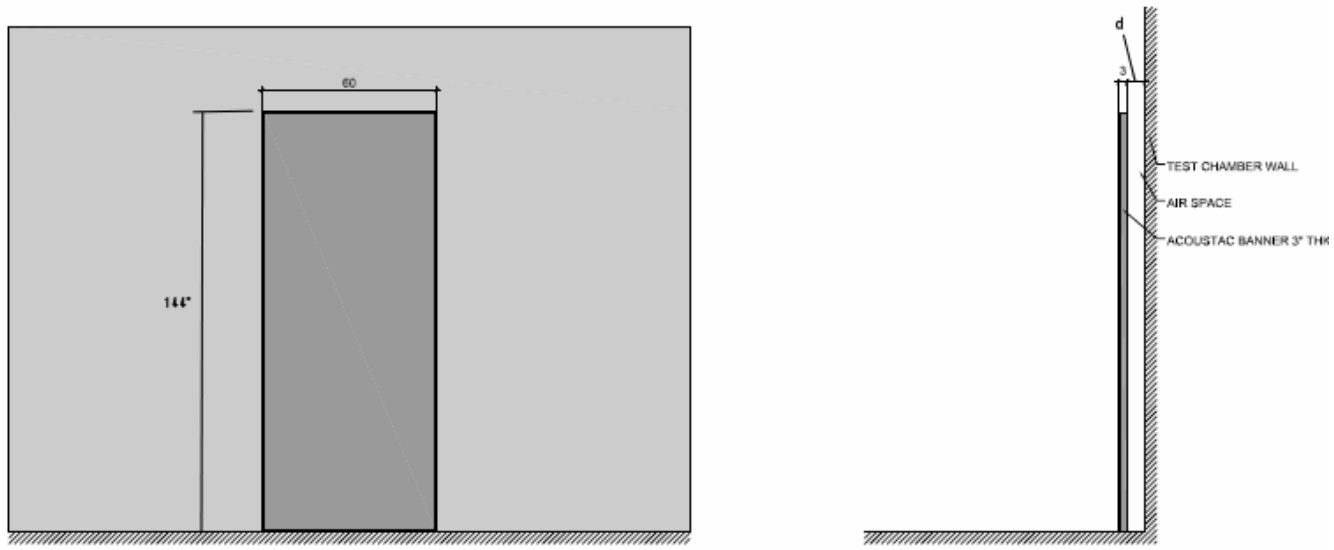
[2]Sound Absorption Coefficient, SAA, per ASTM C423.

[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")

[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.

[5] Distance to rear of specimen.

[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

NVLAP CODE 100404-0 1

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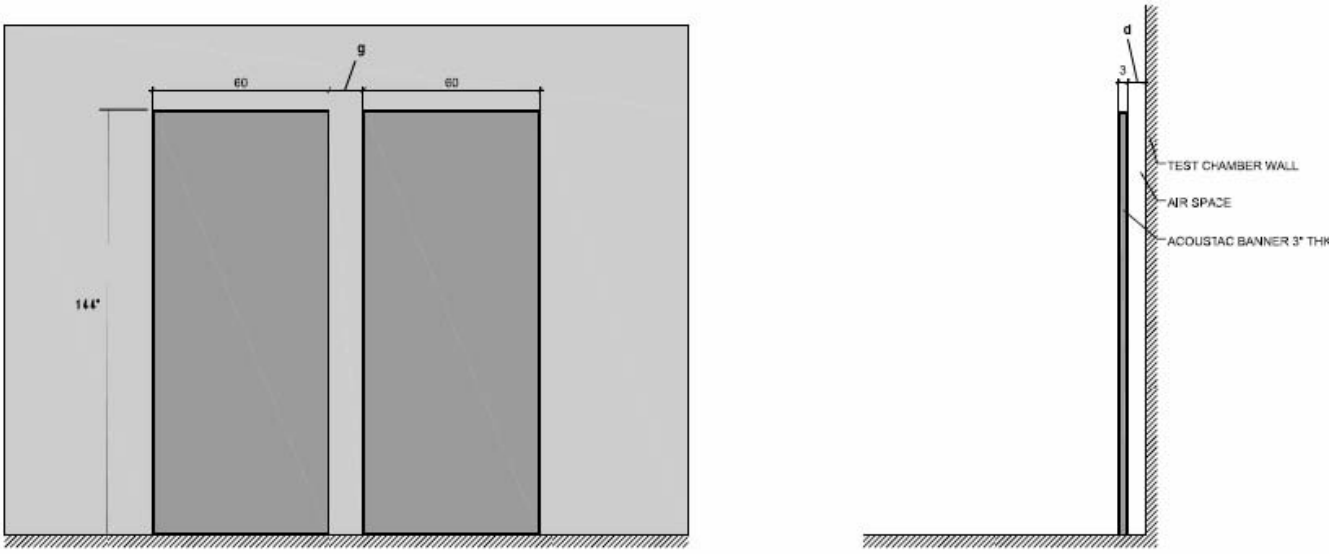
The information provided herein is based on controlled laboratory conditions. The test specimen identification is as provided by the client and IAC accepts no responsibility for any inaccuracies therein. IAC makes no warranty that the results provided herein are representative of actual use conditions. Each user should independently evaluate the data provided and make their own decision as to whether the data is reliable and representative for their service conditions.

IAC authorizes the client named herein to reproduce this report only in its entirety. Testing results apply only to material specimens evaluated within this report.

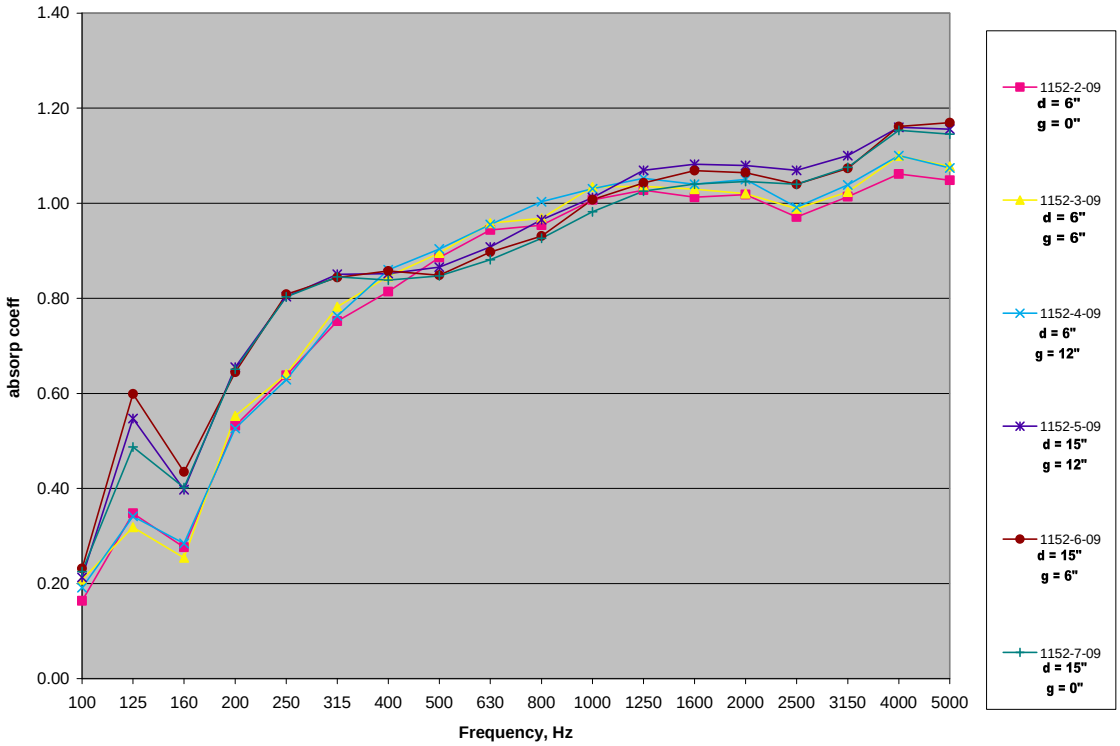
acouStaCorp

Test 76007302: Two 3” thick ACOUSTAC Wool Banners (11” segments) hung sidebyside and parallel to a wall



Notes:
1) 3” thk Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)
2) 3” thk Specimen tested at three different distances, g, from each other: g=0”, g=6”, and g=12”

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-02 **Date:** 7/9/2009

Specimen: **Two 3" thk ACOUSTAC Wool Banners (11" segments) hung side-by-side and parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

Two drapery specimens described as "ACOUSTAC acoustic wool banner" by the client were tested inside IAC's 10,000 cu.ft. reverberation room. The specimens consisted of two 12'x5' ACOUSTAC curtains provided by the client. The specimens were hung side-by-side and parallel to one of the reinforced steel walls of the reverberation room. The drapery specimens were hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimens and into the space behind them.

A visual inspection determined that each ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

In addition, at each distance from the wall, the specimens were also hung and tested at three different distances from each other:

1. **0" apart** *(see Remark #1, below)*
2. **6" apart**
3. **12" apart**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. When the specimens were hung directly side-by-side to each other, the "0 in. apart" condition, they were not fastened to each other. As a result a small gap between 1.5" to 2.5" remained between them.
2. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
3. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
4. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for Two 3" thk ACOUSTAC Wool Banners (11" segments) hung side-by-side and parallel to a wall

Freq., Hz	Specimen Distance from Wall					
	6" [5]			15" [6]		
	Gap bet. Curtain Specimens					
	0" apart	6" apart	12" apart	0" apart	6" apart	12" apart
	Absorption Coefficient					
50	-0.01	0.01	0.01	0.21	0.10	0.06
63	0.05	0.07	0.10	0.11	0.09	0.07
80	0.13	0.08	0.15	0.23	0.24	0.27
100	0.16	0.21	0.19	0.23	0.23	0.21
125	0.35	0.32	0.34	0.49	0.60	0.55
160	0.28	0.25	0.28	0.40	0.43	0.40
200	0.53	0.55	0.53	0.65	0.64	0.65
250	0.64	0.64	0.63	0.80	0.81	0.80
315	0.75	0.78	0.76	0.84	0.84	0.85
400	0.81	0.85	0.86	0.84	0.86	0.85
500	0.89	0.90	0.90	0.85	0.85	0.87
630	0.94	0.96	0.96	0.88	0.90	0.91
800	0.95	0.97	1.00	0.93	0.93	0.97
1000	1.01	1.03	1.03	0.98	1.01	1.01
1250	1.03	1.04	1.05	1.03	1.04	1.07
1600	1.01	1.03	1.04	1.04	1.07	1.08
2000	1.02	1.02	1.05	1.05	1.06	1.08
2500	0.97	0.99	0.99	1.04	1.04	1.07
3150	1.01	1.02	1.04	1.08	1.07	1.10
4000	1.06	1.10	1.10	1.15	1.16	1.16
5000	1.05	1.08	1.07	1.15	1.17	1.16
6300	1.05	1.14	1.13	1.18	1.21	1.17
8000	1.05	1.15	1.10	1.24	1.22	1.16
10000	1.03	1.19	1.11	1.25	1.32	1.17
NRC[1]	0.90	0.90	0.90	0.90	0.95	0.95
SAA[2]	0.88	0.90	0.90	0.91	0.92	0.93
Spec. Face Area[4], Sq. Ft.	120.00					
Test Environment Conditions[3]						
Temp (°F)	74/74	74/75	74/76	74/74	74/75	74/77
Humid (%)	58/58	58/59	58/56	58/58	58/59	58/56
BP (%)	30.38/30.4	30.38/30.4	30.38/30.4	30.36/30.36	30.38/30.36	30.38/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.

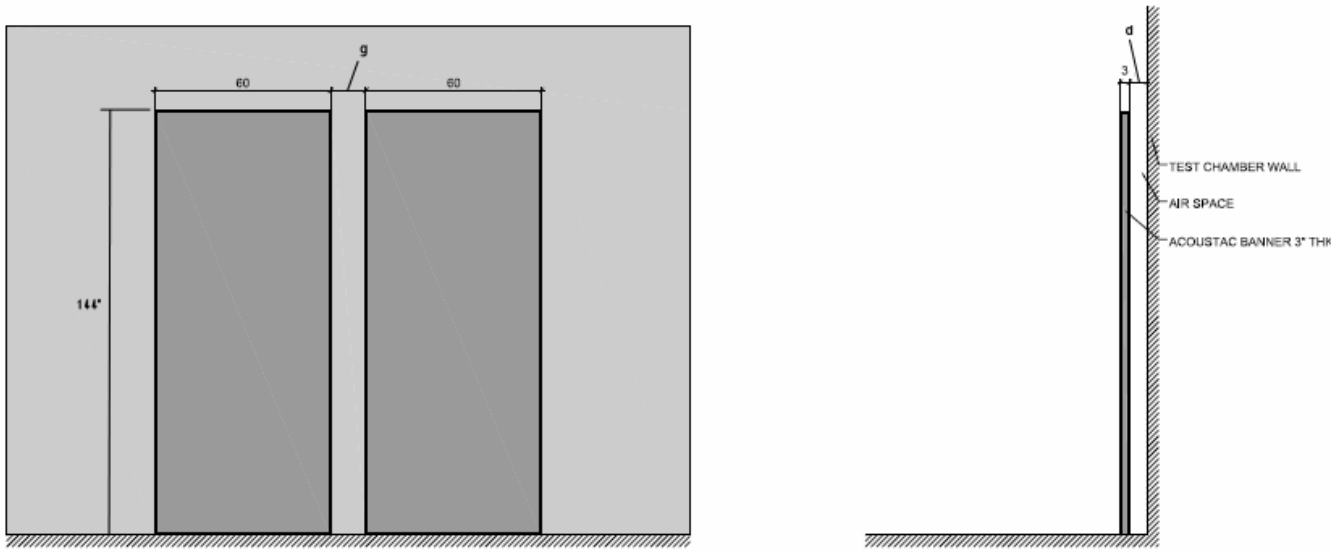
[2]Sound Absorption Coefficient, SAA, per ASTM C423.

[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")

[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.

[5] Distance to rear of specimen.

[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)
2) 3" thk Specimen tested at three different distances, g, from each other: g=0", g=6", and g=12"

Figure 1: Specimen Layout inside Test Room

Report Prepared by: **Victor Clemente, Test Engineer**

Approved by: **Jon Weinstein, Lab Director**

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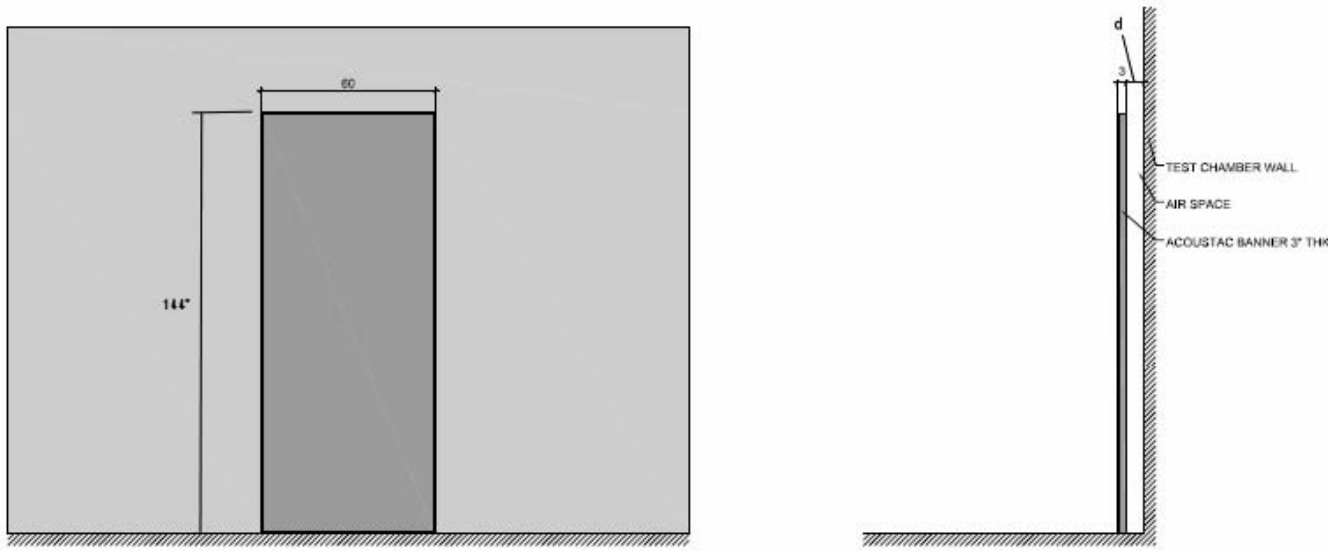
IAC authorizes the client named herein to reproduce this report only in its entirety. Testing results apply only to material specimens evaluated within this report.

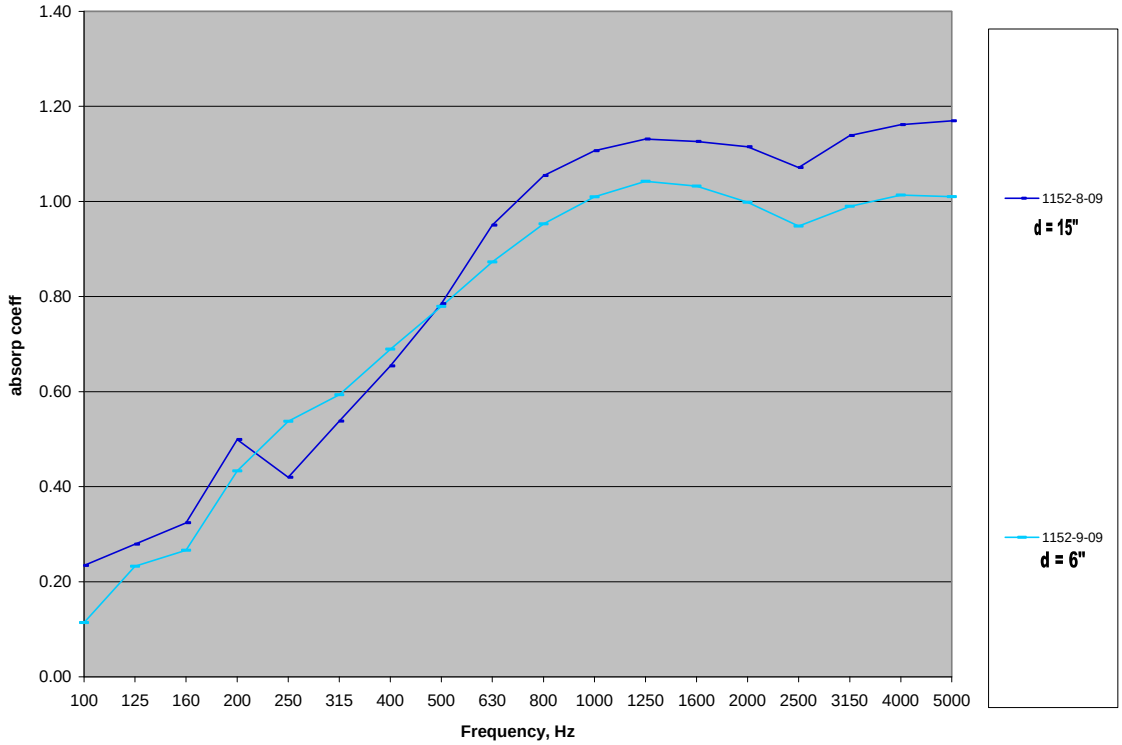
acouStaCorp

Test 76007303: One 3” thick ACOUSTAC Velour Banner (11” segments) hung parallel to a wall



Notes:
1) 3” thk Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Accredited by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, **NATIONAL VOLUNTARY LAB ACCREDITATION PROGRAM** (Lab code 100404-0) FOR ACOUSTICAL TESTING SERVICES (selected test methods)

Laboratory Report No : 76-0073-03 **Date:** 7/9/2009

Specimen: **One 3" thk ACOUSTAC Velour Banner (11" segments) hung parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic velour banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung parallel to one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimen and into the space behind it.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of velour fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39.5 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

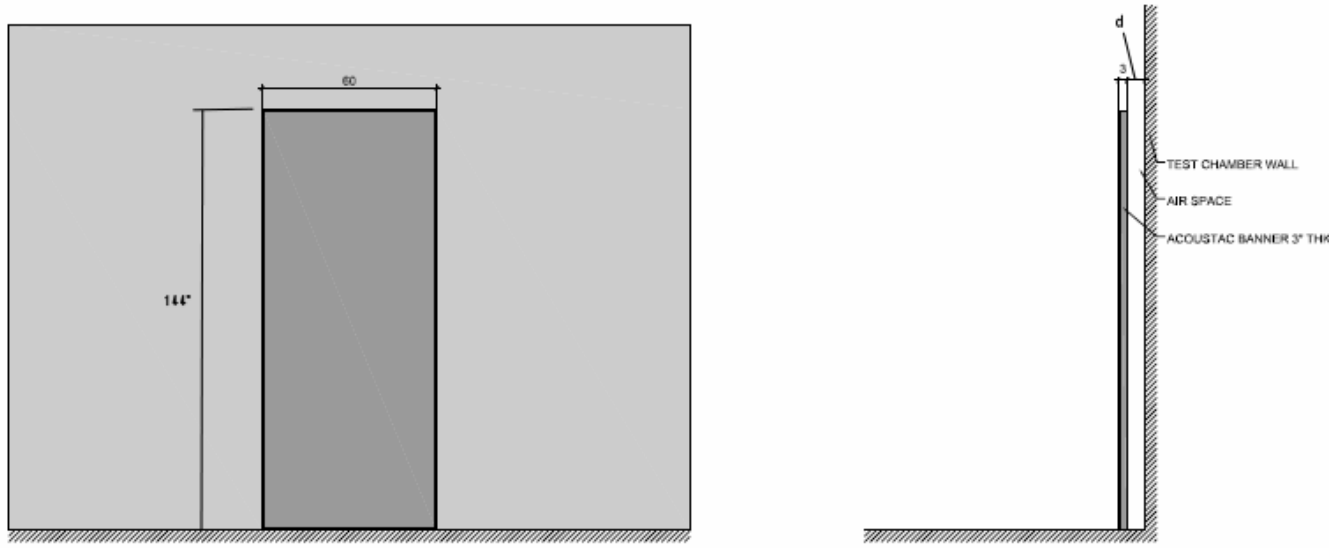
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Velour Banner (11" segments) hung parallel to a wall

Freq. Hz	Specimen Distance from Wall	
	6" [5]	15" [6]
	Absorption Coefficient	
50	-0.05	0.19
63	0.10	-0.10
80	0.06	0.32
100	0.11	0.23
125	0.23	0.28
160	0.27	0.32
200	0.43	0.50
250	0.54	0.42
315	0.59	0.54
400	0.69	0.65
500	0.78	0.78
630	0.87	0.95
800	0.95	1.05
1000	1.01	1.11
1250	1.04	1.13
1600	1.03	1.13
2000	1.00	1.12
2500	0.95	1.07
3150	0.99	1.14
4000	1.01	1.16
5000	1.01	1.17
6300	1.03	1.22
8000	1.07	1.30
10000	1.11	1.23
NRC[1]	0.85	0.85
SAA[2]	0.82	0.87
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	74/74	74/73
Humid (%)	56/56	58/61
BP (%)	30.2/30.2	30.36/30.34

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.
[5] Distance to rear of specimen.
[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by: **Victor Clemente, Test Engineer**

Approved by: **Jon Weinstein, Lab Director**

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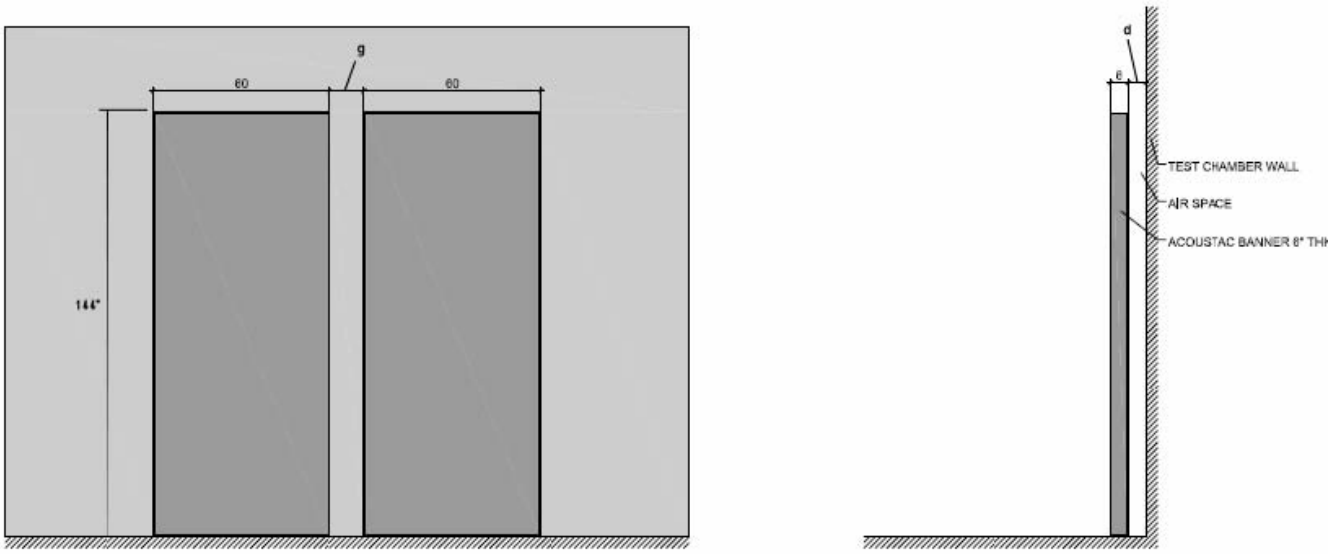
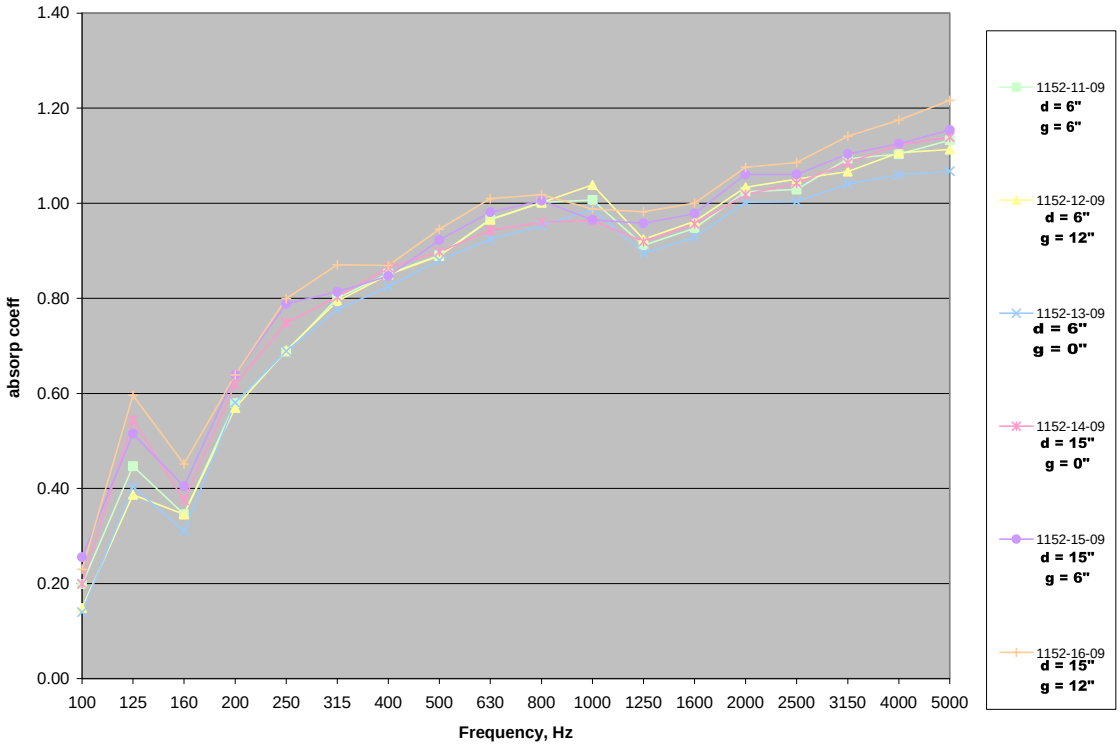


Notes:
1) 3” thk Specimen tested at two different distances, d, from wall: d=6” and d=9” (15” from front of specimen)
2) 3” thk Specimen tested at three different distances, g, from each other: g=0”, g=6”, and g=12”

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-04 **Date:** 7/9/2009

Specimen: **Two 6" thk ACOUSTAC Wool Banners (11" segments) hung side-by-side and parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

Two drapery specimens described as "ACOUSTAC acoustic wool banner" by the client were tested inside IAC's 10,000 cu.ft. reverberation room. The specimens consisted of two 12'x5' ACOUSTAC curtains provided by the client. The specimens were hung side-by-side and parallel to one of the reinforced steel walls of the reverberation room. The drapery specimens were hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimens and into the space behind them.

A visual inspection determined that each ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 6" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x6". The specimen weight was 45 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (9" from the rear)**

In addition, at each distance from the wall, the specimens were also hung and tested at three different distances from each other:

1. **0" apart** *(see Remark #1, below)*
2. **6" apart**
3. **12" apart**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. When the specimens were hung directly side-by-side to each other, the "0 in. apart" condition, they were not fastened to each other. As a result a small gap between 1.5" to 2.5" remained between them.
2. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
3. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
4. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for Two 6" thk ACOUSTAC Wool Banners (11" segments) hung side-by-side and parallel to a wall

Freq., Hz	Specimen Distance from Wall					
	6" [5]			15" [6]		
	Gap bet. Curtain Specimens					
	0" apart	6" apart	12" apart	0" apart	6" apart	12" apart
	Absorption Coefficient					
50	0.01	0.07	0.13	0.14	0.14	0.09
63	0.11	0.07	0.10	0.13	0.14	0.12
80	0.12	0.11	0.15	0.19	0.21	0.18
100	0.14	0.20	0.15	0.20	0.26	0.23
125	0.40	0.45	0.39	0.54	0.52	0.60
160	0.31	0.35	0.35	0.37	0.40	0.45
200	0.58	0.58	0.57	0.62	0.64	0.64
250	0.69	0.69	0.69	0.75	0.79	0.80
315	0.78	0.80	0.79	0.80	0.81	0.87
400	0.82	0.85	0.85	0.87	0.85	0.87
500	0.88	0.89	0.89	0.90	0.92	0.95
630	0.92	0.97	0.97	0.94	0.98	1.01
800	0.95	1.00	1.00	0.96	1.01	1.02
1000	0.99	1.01	1.04	0.96	0.96	0.99
1250	0.89	0.91	0.92	0.92	0.96	0.98
1600	0.93	0.95	0.96	0.96	0.98	1.00
2000	1.00	1.02	1.03	1.02	1.06	1.08
2500	1.00	1.03	1.05	1.04	1.06	1.09
3150	1.04	1.09	1.07	1.08	1.10	1.14
4000	1.06	1.10	1.11	1.12	1.13	1.18
5000	1.07	1.13	1.11	1.14	1.15	1.22
6300	1.08	1.14	1.11	1.12	1.16	1.24
8000	1.11	1.15	1.15	1.16	1.18	1.32
10000	1.11	1.20	1.12	1.28	1.26	1.47
NRC[1]	0.90	0.90	0.90	0.90	0.95	0.95
SAA[2]	0.87	0.89	0.90	0.89	0.92	0.94
Spec. Face Area[4], Sq. Ft.	120.00					
Test Environment Conditions[3]						
Temp (°F)	74/74	74/74.5	74/73	74/74	74/74	74/75
Humid (%)	56/58	56/55	56/58	56/56	56/54	56/59
BP (%)	30.2/30.24	30.2/30.2	30.2/30.24	30.2/30.24	30.2/30.24	30.2/30.24

[1]Noise Reduction Coefficient, NRC, per ASTM C423.

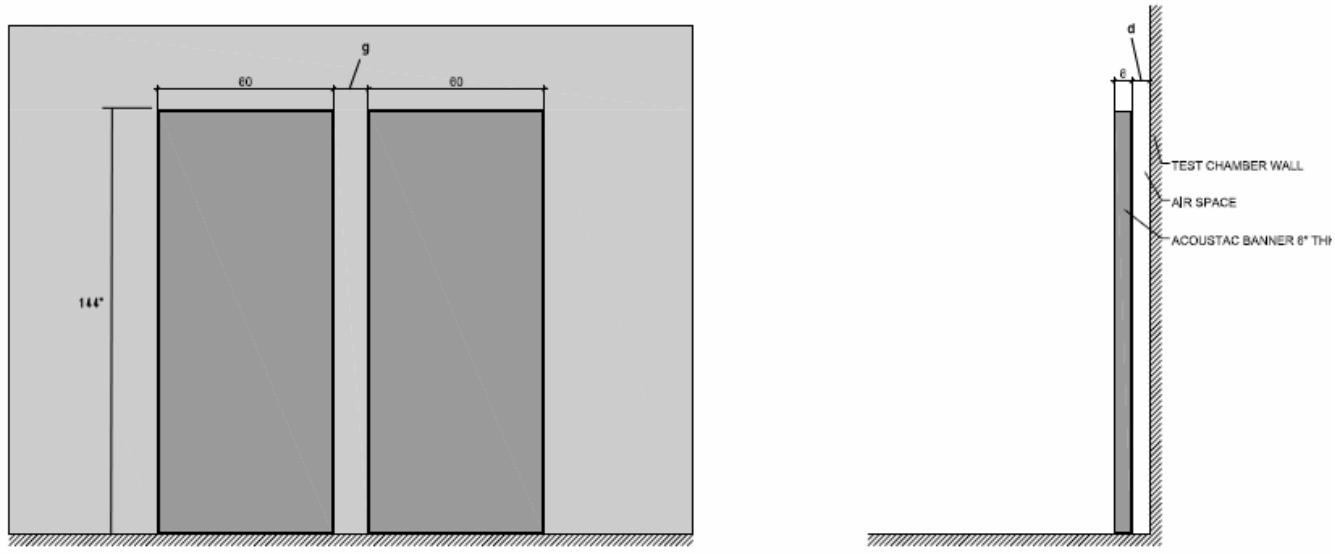
[2]Sound Absorption Coefficient, SAA, per ASTM C423.

[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")

[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.

[5] Distance to rear of specimen.

[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=9" (15" from front of specimen)
2) 3" thk Specimen tested at three different distances, g, from each other: g=0", g=6", and g=12"

Figure 1: Specimen Layout inside Test Room

Report Prepared by: **Victor Clemente, Test Engineer**

Approved by: **Jon Weinstein, Lab Director**

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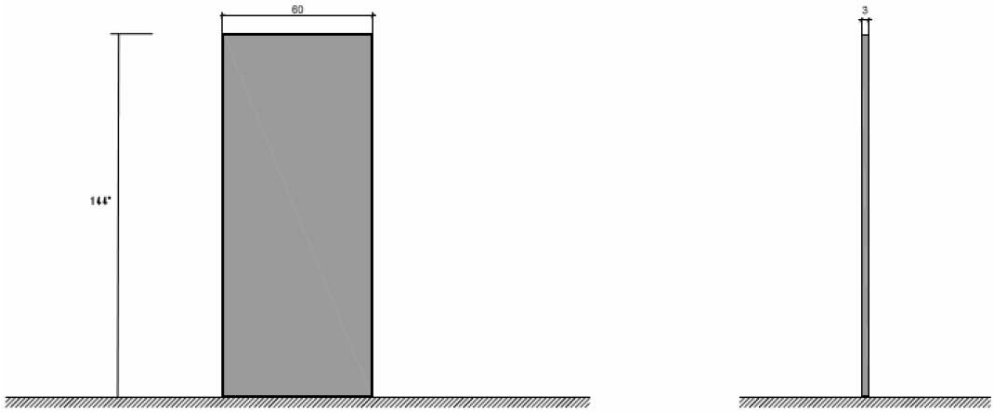
Test 76007305: One 3” thick ACOUSTAC Wool Banner (11” segments) hung in the middle of a room



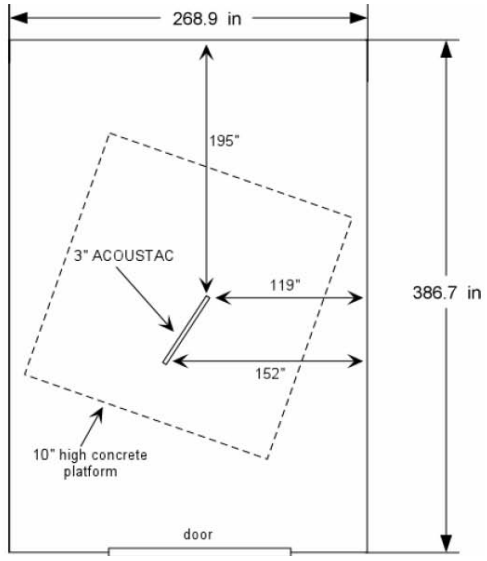


Figure 1: Specimen Layout inside Reverberation Room

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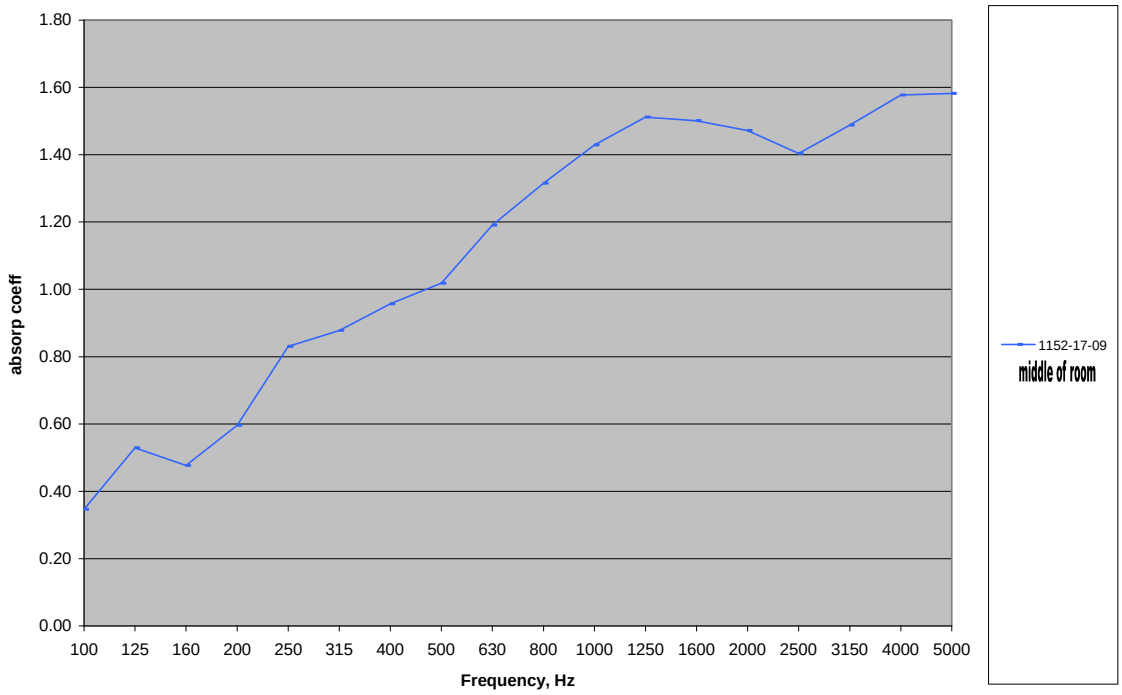
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
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absorp coeff
100
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200
250
315
400
500
630
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1250
1600
2000
2500
3150
4000
5000
Frequency, Hz
1152-17-09
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Laboratory Report No : 76-0073-05 **Date:** 7/9/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (11" segments) hung in the middle of a room**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The **specimen was hung from the ceiling, near the center of the reverberation room**. The specimen was hung in such a way that it was not parallel to any of the room walls.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39 lbs. Further design and construction details are the proprietary information of the client.

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

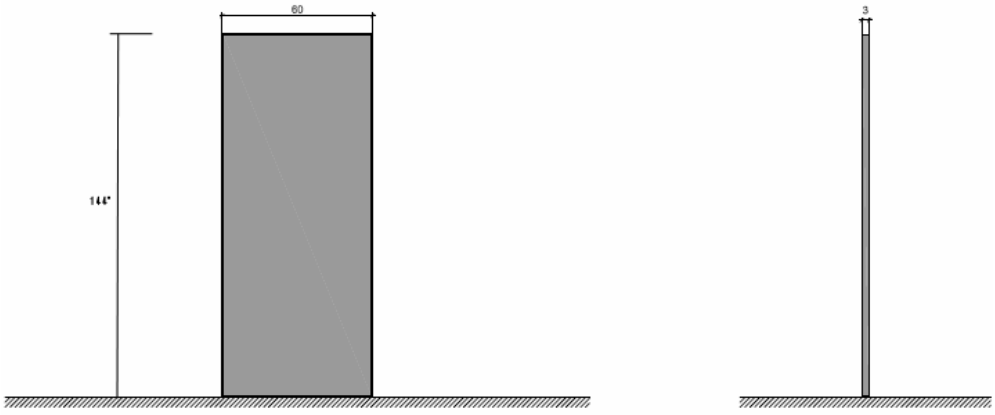
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (11" segments) hung in the middle of a room

Freq., Hz	Absorption Coefficient
50	0.24
63	0.07
80	0.72
100	0.35
125	0.53
160	0.48
200	0.60
250	0.83
315	0.88
400	0.96
500	1.02
630	1.19
800	1.32
1000	1.43
1250	1.51
1600	1.50
2000	1.47
2500	1.40
3150	1.49
4000	1.58
5000	1.58
6300	1.64
8000	1.76
10000	1.84
NRC[1]	**1.20**
SAA[2]	**1.18**
Spec. Face Area[4], Sq. Ft.	**60.00**
Test Environment Conditions[3]	
Temp (°F)	73.5/74
Humid (%)	58/58
BP (%)	30.35/30.35

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.



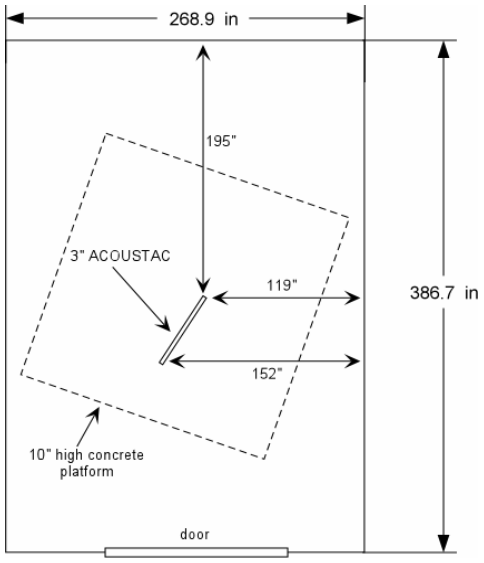


Figure 1: Specimen Layout inside Reverberation Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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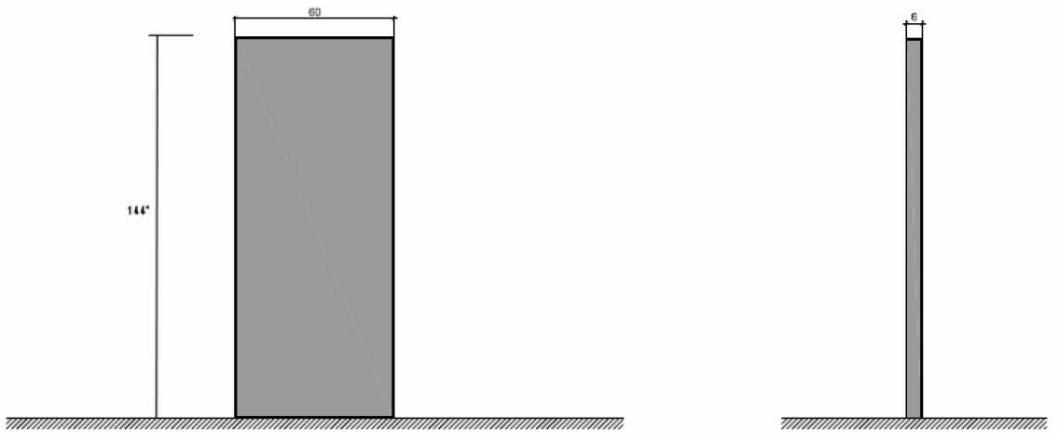
Test 76007306: One 6” thick ACOUSTAC Wool Banner (11” segments) hung in the middle of a room



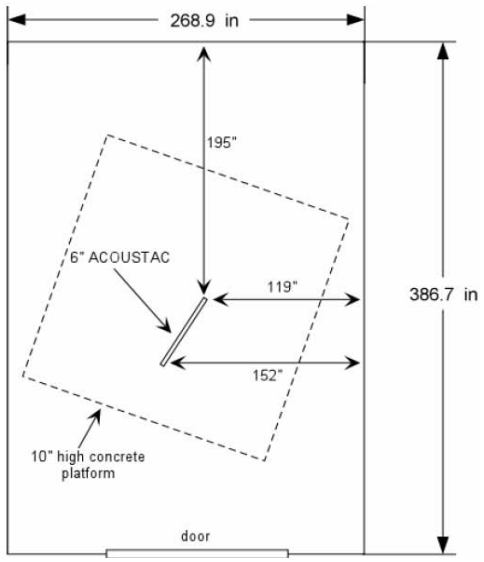
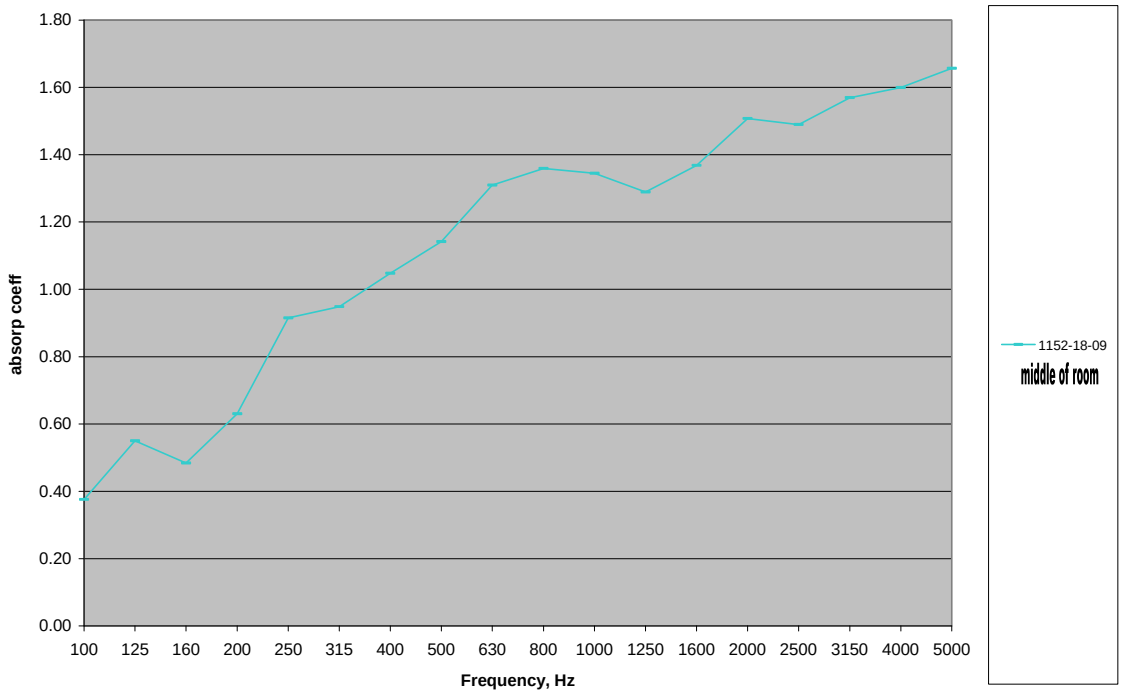


Figure 1: Specimen Layout inside Reverberation Room

1152-18-09


1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
absorp coeff
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
Frequency, Hz
1152-18-09
middle of room

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Laboratory Report No : 76-0073-06 **Date:** 7/9/2009

Specimen: **One 6" thk ACOUSTAC Wool Banner (11" segments) hung in the middle of a room**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The **specimen was hung from the ceiling, near the center of the reverberation room**. The specimen was hung in such a way that it was not parallel to any of the room walls.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 6" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x6". The specimen weight was 45 lbs. Further design and construction details are the proprietary information of the client.

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

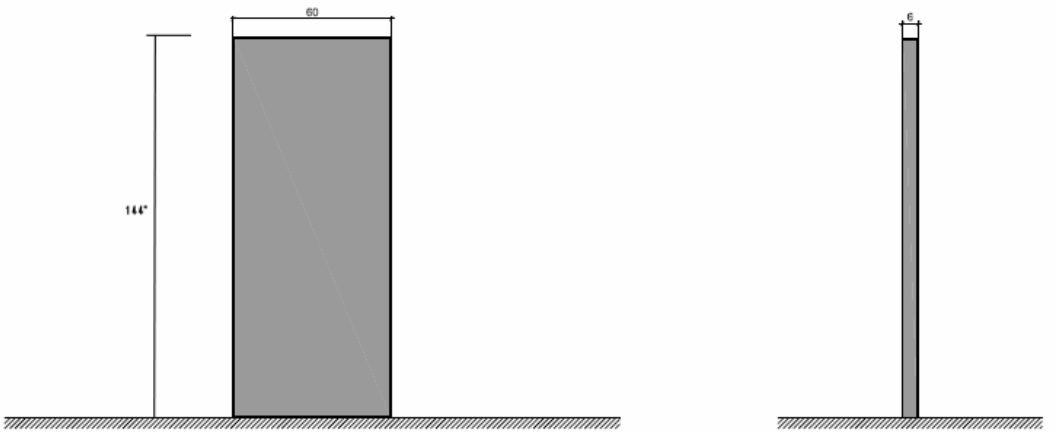
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 6" thk ACOUSTAC Wool Banner (11" segments) hung in the middle of a room

Freq., Hz	Absorption Coefficient
50	0.22
63	0.05
80	0.62
100	0.38
125	0.55
160	0.48
200	0.63
250	0.91
315	0.95
400	1.05
500	1.14
630	1.31
800	1.36
1000	1.34
1250	1.29
1600	1.37
2000	1.51
2500	1.49
3150	1.57
4000	1.60
5000	1.66
6300	1.61
8000	1.71
10000	1.90
NRC[1]	1.25
SAA[2]	1.20
Spec. Face Area[4], Sq. Ft.	60.00
Test Environment Conditions[3]	
Temp (°F)	73.5/74
Humid (%)	58/56
BP (%)	30.35/30.35

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.



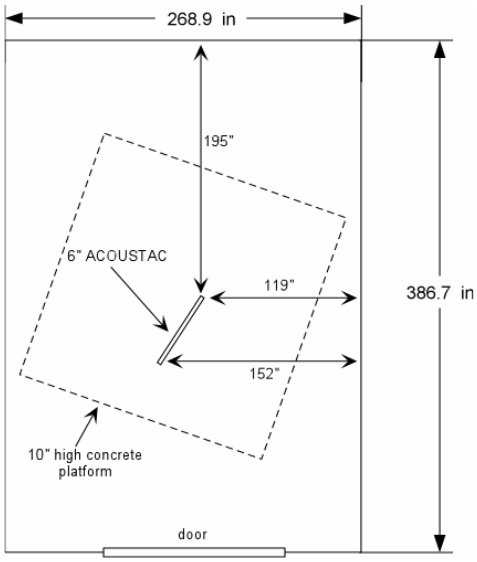


Figure 1: Specimen Layout inside Reverberation Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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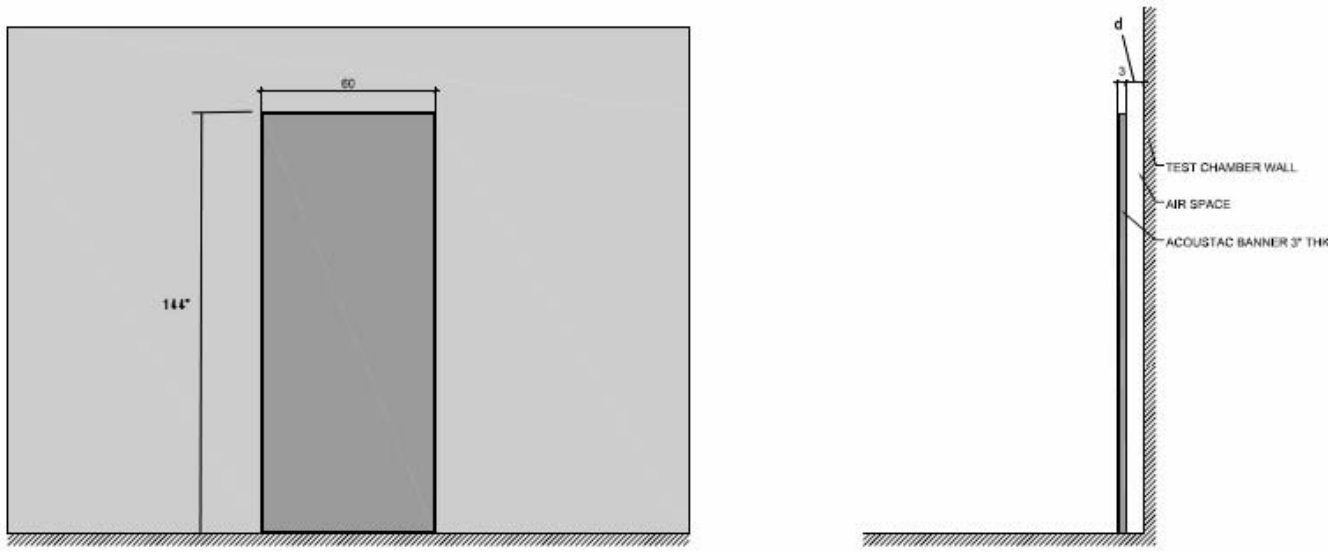
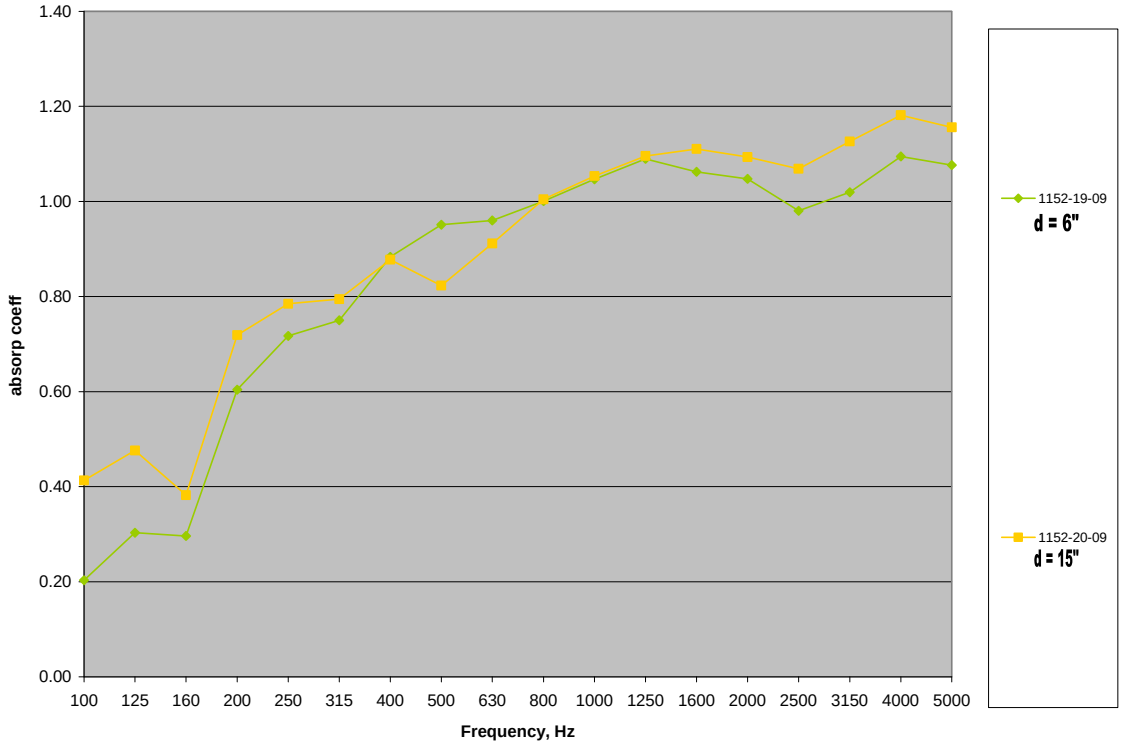
acouStaCorp

Test 76007307: One 3” thick ACOUSTAC Wool Banner (11” segments) hung parallel to a wall



Notes:
1) 3” thick Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-07 **Date:** 7/9/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (11" segments) hung parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung parallel to one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimen and into the space behind it.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (11" segments) hung parallel to a wall

Freq. Hz	Specimen Distance from Wall	
	6" [5]	15" [6]
	Absorption Coefficient	
50	0.17	0.17
63	0.05	0.18
80	0.27	0.36
100	0.20	0.41
125	0.30	0.48
160	0.30	0.38
200	0.60	0.72
250	0.72	0.78
315	0.75	0.79
400	0.88	0.88
500	0.95	0.82
630	0.96	0.91
800	1.00	1.00
1000	1.05	1.05
1250	1.09	1.10
1600	1.06	1.11
2000	1.05	1.09
2500	0.98	1.07
3150	1.02	1.13
4000	1.09	1.18
5000	1.08	1.16
6300	1.08	1.19
8000	1.11	1.19
10000	1.12	1.24
NRC[1]	0.95	0.95
SAA[2]	0.92	0.94
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	73.5/74	74/74
Humid (%)	58/56	58/58
BP (%)	30.35/30.35	30.38/30.38

[1]Noise Reduction Coefficient, NRC, per ASTM C423.

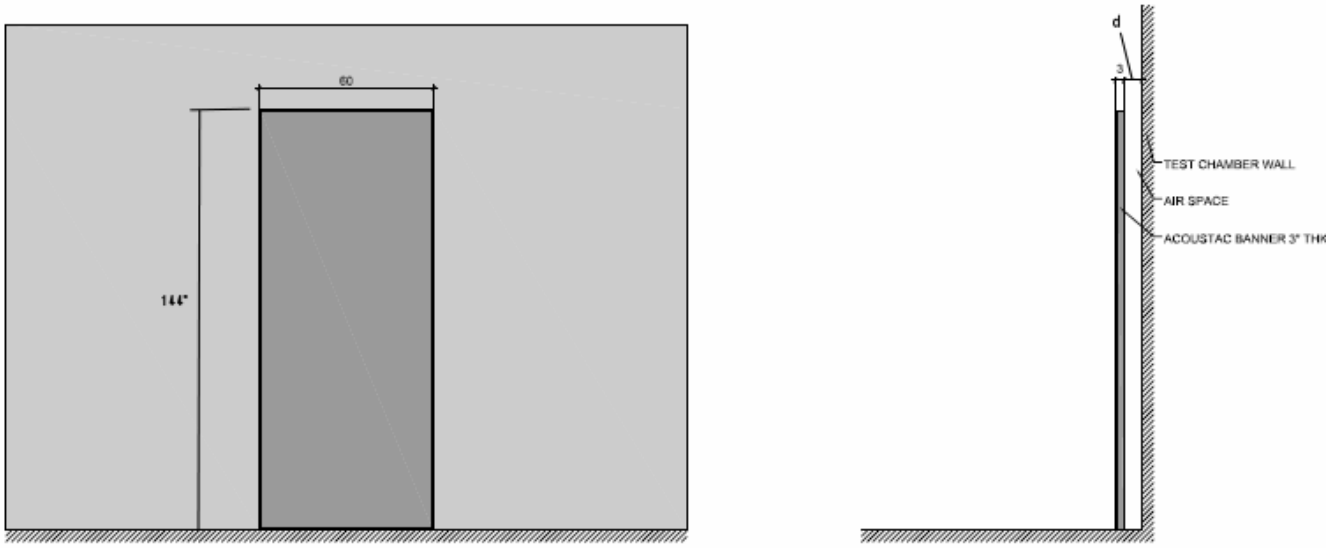
[2]Sound Absorption Coefficient, SAA, per ASTM C423.

[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")

[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.

[5] Distance to rear of specimen.

[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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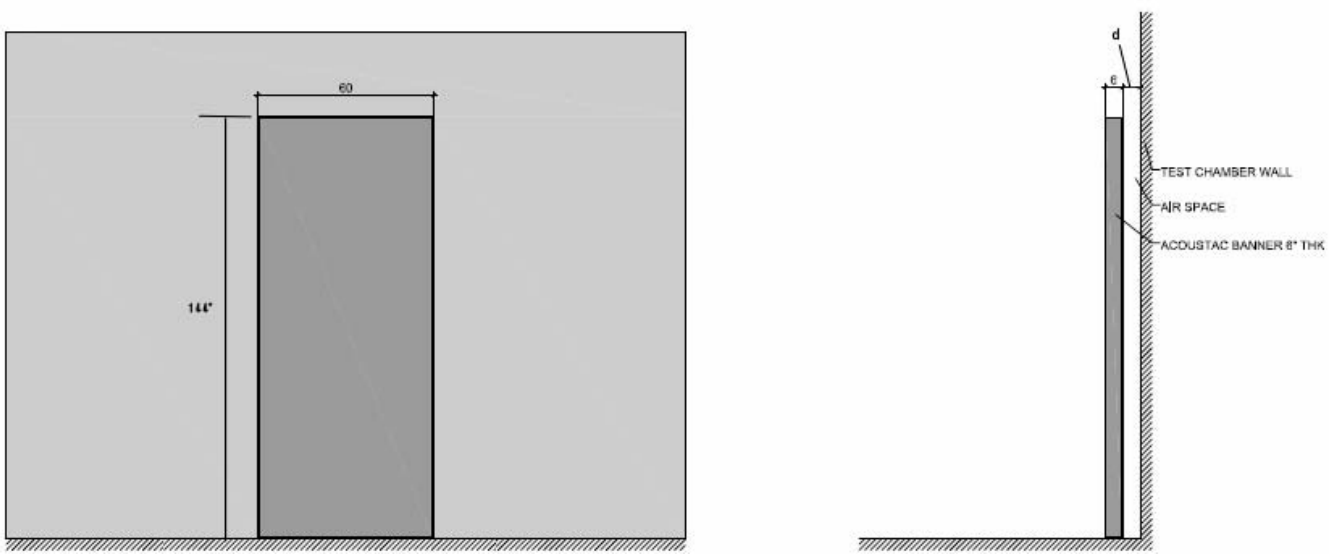
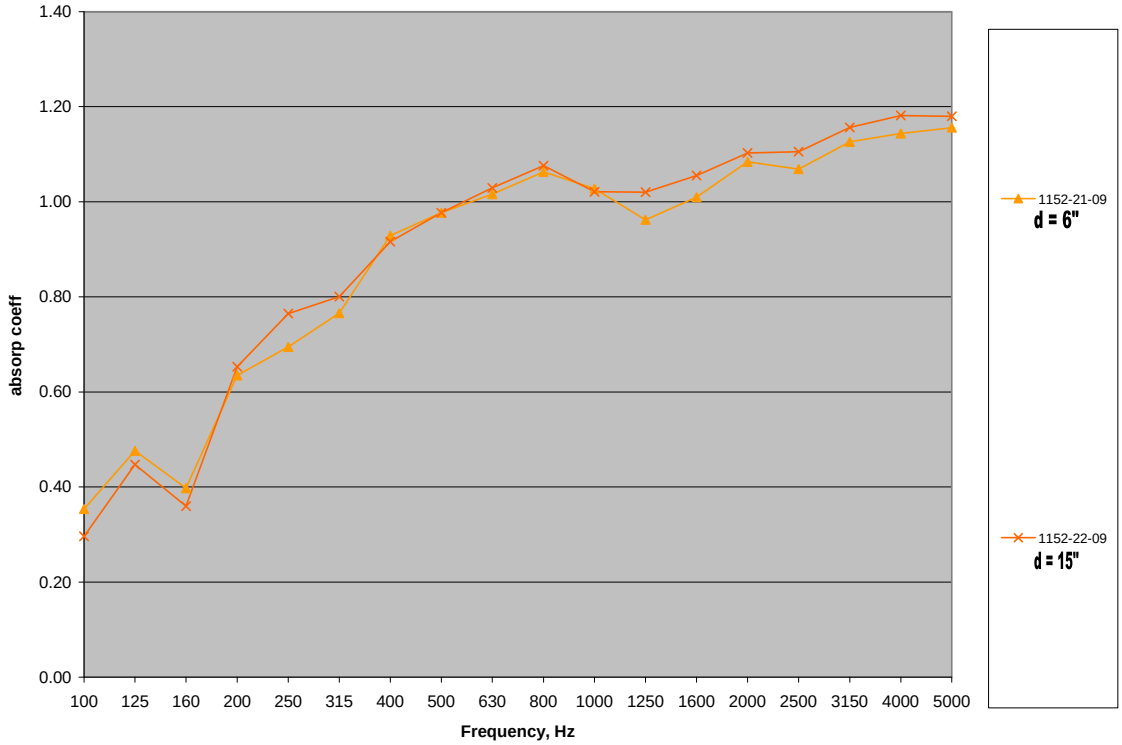
acouStaCorp

Test 76007308: One 6” thick ACOUSTAC Wool Banner (11” segments) hung parallel to a wall



Notes:
1) 6” thick Specimen tested at two different distances, d, from wall: d=6” and d=9” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-08 **Date:** 7/9/2009

Specimen: **One 6" thk ACOUSTAC Wool Banner (11" segments) hung parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung parallel to one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimen and into the space behind it.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 6" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x6". The specimen weight was 45 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the wall:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (9" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 6" thk ACOUSTAC Wool Banner (11" segments) hung parallel to a wall

Freq. Hz	Specimen Distance from Wall	
	6" [5]	15" [6]
	Absorption Coefficient	
50	0.05	-0.05
63	0.00	0.26
80	0.20	0.36
100	0.35	0.30
125	0.48	0.45
160	0.40	0.36
200	0.63	0.65
250	0.69	0.76
315	0.77	0.80
400	0.93	0.92
500	0.98	0.98
630	1.02	1.03
800	1.06	1.08
1000	1.03	1.02
1250	0.96	1.02
1600	1.01	1.06
2000	1.08	1.10
2500	1.07	1.11
3150	1.13	1.16
4000	1.14	1.18
5000	1.16	1.18
6300	1.15	1.22
8000	1.13	1.24
10000	1.14	1.24
NRC[1]	**0.95**	**0.95**
SAA[2]	**0.94**	**0.96**
Spec. Face Area[4], Sq. Ft.	**60.00**	
Test Environment Conditions[3]		
Temp (°F)	74/74	74/74
Humid (%)	58/58	58/58
BP (%)	30.38/30.38	30.38/30.38

[1]Noise Reduction Coefficient, NRC, per ASTM C423.

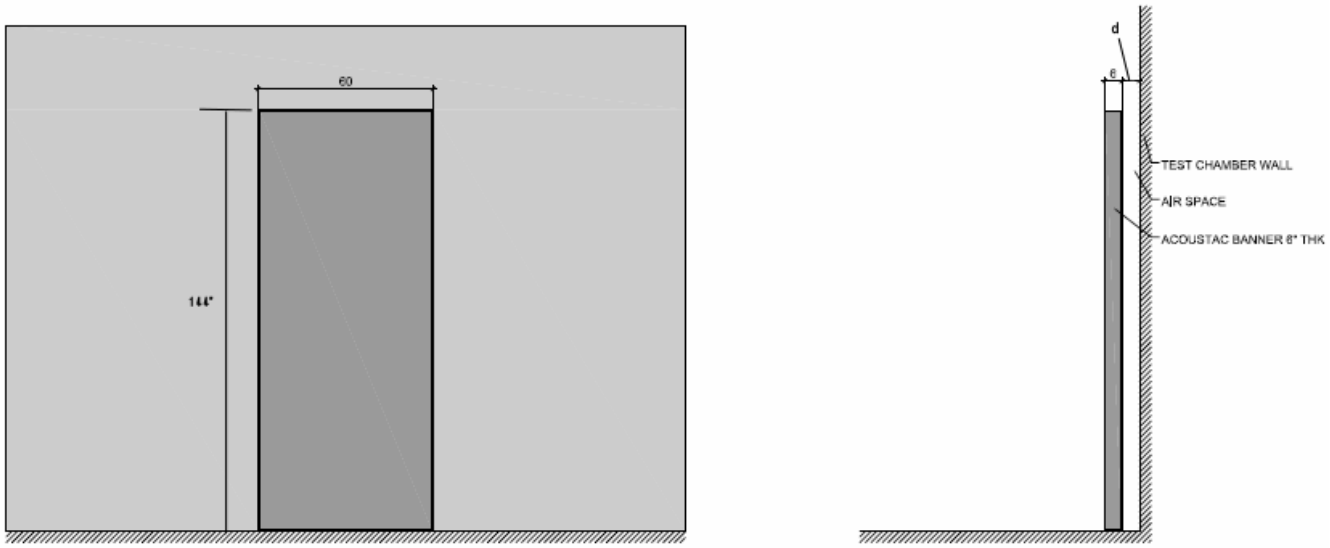
[2]Sound Absorption Coefficient, SAA, per ASTM C423.

[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")

[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.

[5] Distance to rear of specimen.

[6] Distance to front of specimen.



Notes:
1) 6" thk Specimen tested at two different distances, d, from wall: d=6" and d=9" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by: **Victor Clemente, Test Engineer**

Approved by: **Jon Weinstein, Lab Director**

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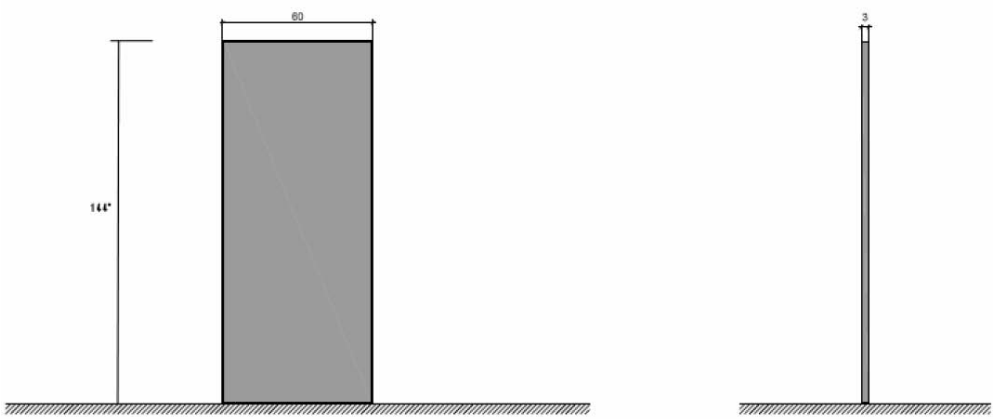
Test 76007309: One 3” thick ACOUSTAC Velour Banner (11” segments) hung in the middle of a room



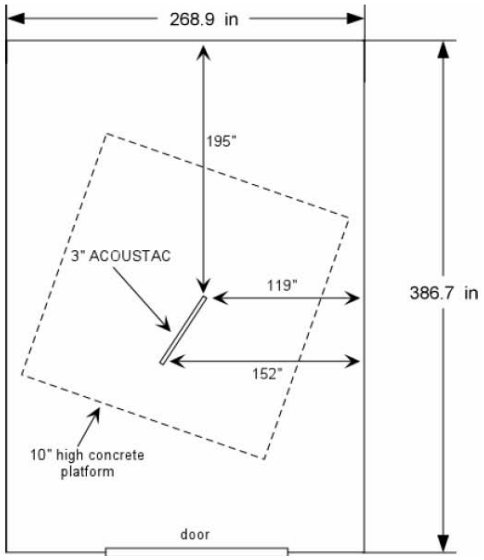
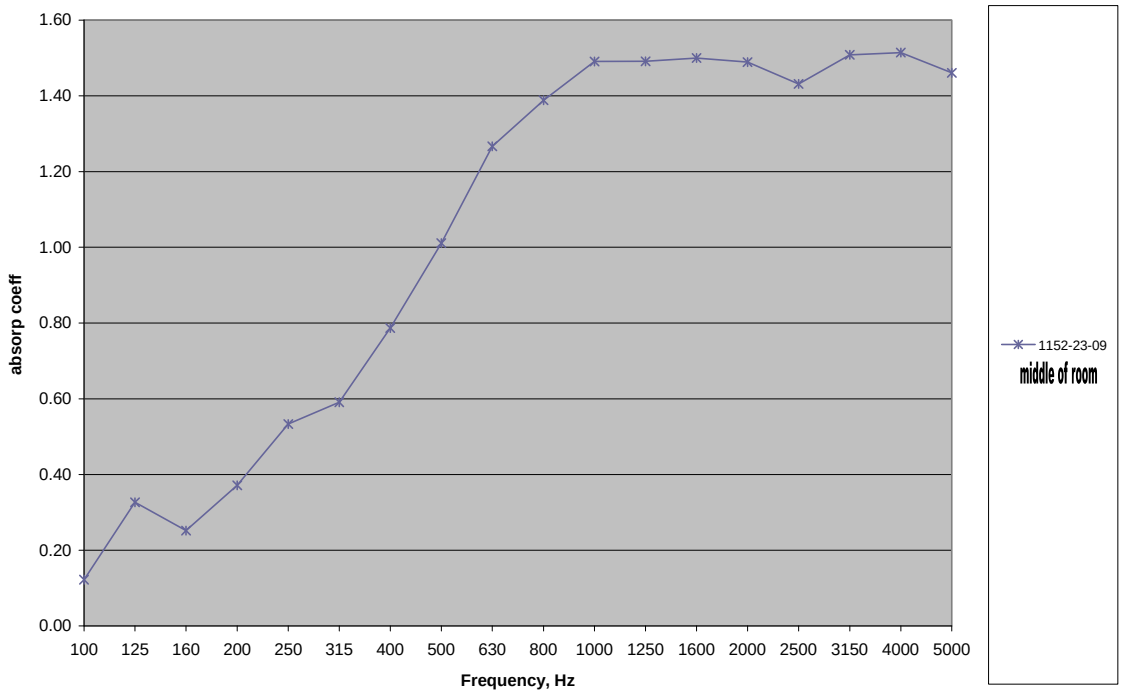


Figure 1: Specimen Layout inside Reverberation Room

1152-23-09


1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
absorp coeff
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
Frequency, Hz
1152-23-09
middle of room

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Accredited by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, **NATIONAL VOLUNTARY LAB ACCREDITATION PROGRAM** (Lab code 100404-0) FOR ACOUSTICAL TESTING SERVICES (selected test methods)

Laboratory Report No : 76-0073-09 **Date:** 7/9/2009

Specimen: **One 3" thk ACOUSTAC Velour Banner (11" segments) hung in the middle of a room**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic velour banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The **specimen was hung from the ceiling, near the center of the reverberation room**. The specimen was hung in such a way that it was not parallel to any of the room walls.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of velour fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39.5 lbs. Further design and construction details are the proprietary information of the client.

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

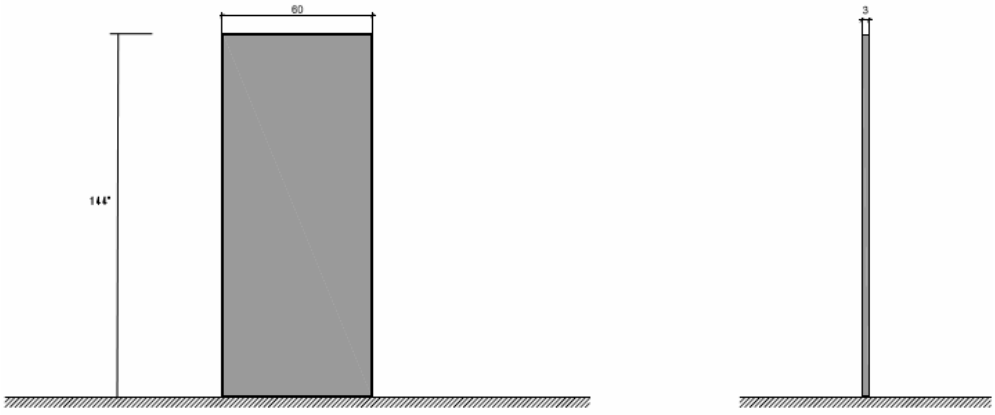
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Velour Banner (11" segments) hung in the middle of a room

Freq., Hz	Absorption Coefficient
50	0.05
63	0.07
80	0.36
100	0.12
125	0.33
160	0.25
200	0.37
250	0.53
315	0.59
400	0.79
500	1.01
630	1.27
800	1.39
1000	1.49
1250	1.49
1600	1.50
2000	1.49
2500	1.43
3150	1.51
4000	1.51
5000	1.46
6300	1.56
8000	1.60
10000	1.67
NRC[1]	1.15
SAA[2]	1.11
Spec. Face Area[4], Sq. Ft.	60.00
Test Environment Conditions[3]	
Temp (°F)	74/74
Humid (%)	58/58
BP (%)	30.38/30.38

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.



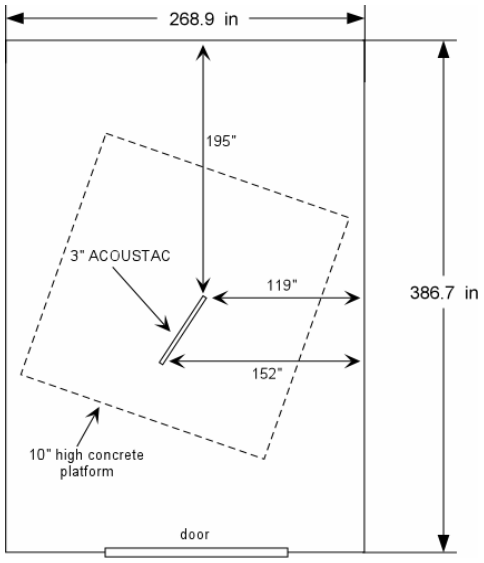


Figure 1: Specimen Layout inside Reverberation Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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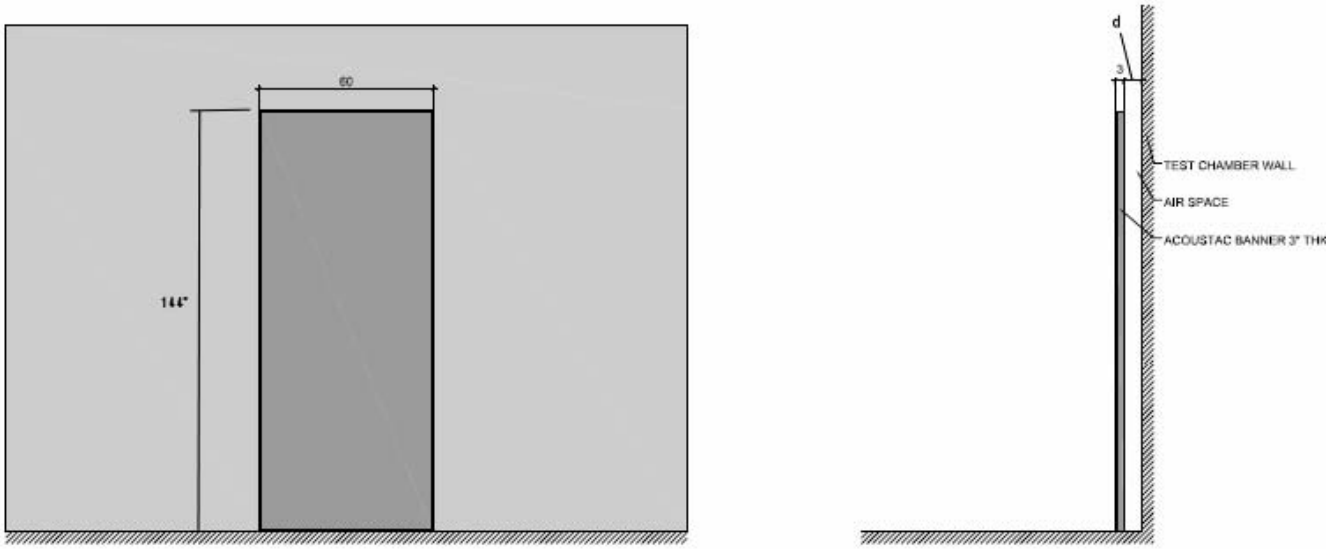
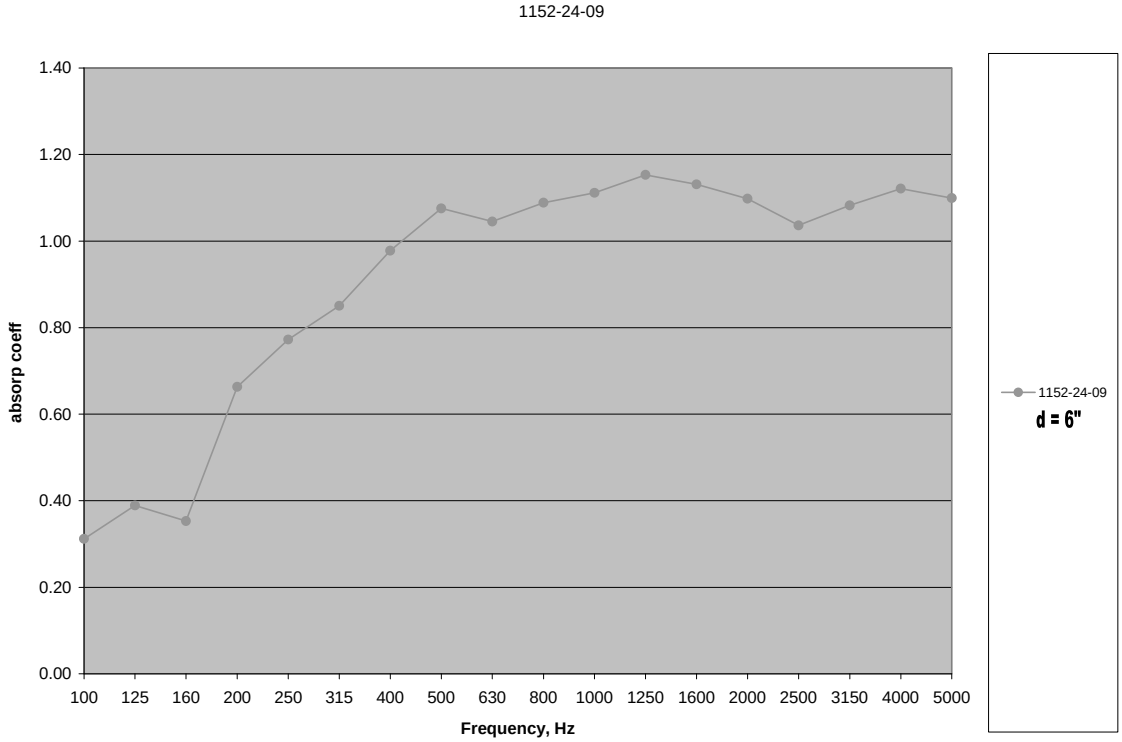
acouStaCorp

Test 76007310: One 3” thick ACOUSTAC Wool Banner (11” segments), with dense spacer clip arrangement, hung parallel to a wall



Notes:
1) 3” thk Specimen tested at d=6” from the wall

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-10 **Date:** 7/9/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (11" segments), with dense spacer clip arrangement, hung parallel to a wall**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung parallel to one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from metal brackets attached to the wall which allowed sound to pass over the top of the specimen and into the space behind it.

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, **clips were placed along the entire specimen's width so that there were no empty spaces between them. This dense clip arrangement prevented sound to move easily between the 11" segments.** Actual specimen dimensions were 12'x5'x3". The specimen weight was 44 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at 6" from the wall.

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

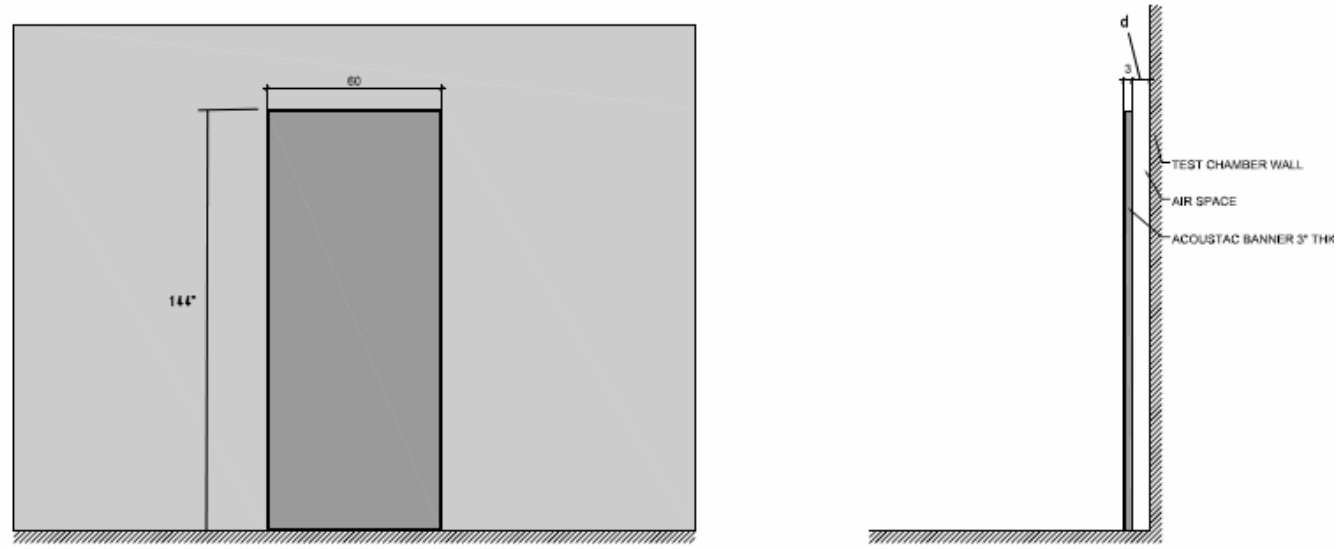
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (11" segments), with dense spacer clip arrangement, hung parallel to a wall

Freq. Hz	Specimen Distance from Wall
	6" [5]
	Absorption Coefficient
50	0.05
63	0.23
80	0.15
100	0.31
125	0.39
160	0.35
200	0.66
250	0.77
315	0.85
400	0.98
500	1.08
630	1.05
800	1.09
1000	1.11
1250	1.15
1600	1.13
2000	1.10
2500	1.04
3150	1.08
4000	1.12
5000	1.10
6300	1.13
8000	1.10
10000	1.09
NRC[1]	1.00
SAA[2]	1.00
Spec. Face Area[4], Sq. Ft.	60.00
Test Environment Conditions[3]	
Temp (°F)	74/73.5
Humid (%)	58/58
BP (%)	30.38/30.38

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calcula of absorp. Coeff.
[5] Distance to rear of specimen.



Notes:
1) 3" thk Specimen tested at d=6" from the wall

Figure 1: Specimen Layout inside Test Room

Report Prepared by: **Victor Clemente, Test Engineer**

Approved by: **Jon Weinstein, Lab Director**

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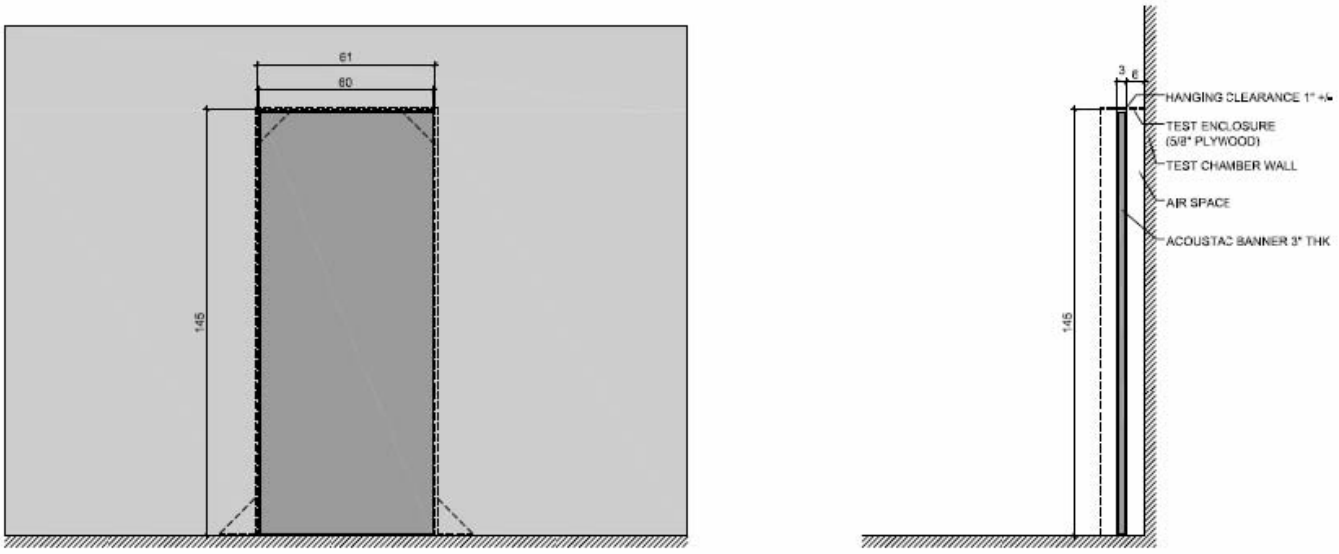
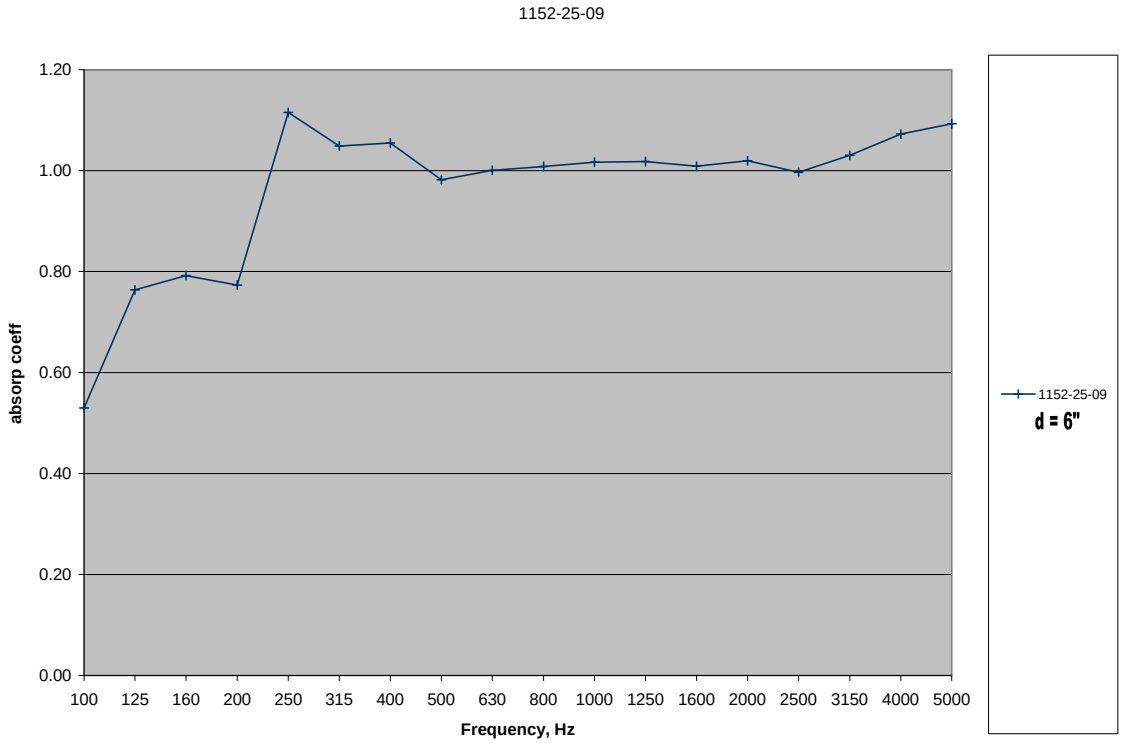


Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-11 **Date:** 7/10/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (11" segments), with dense spacer clip arrangement, hung inside an enclosure**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung inside a 5/8" thick plywood enclosure with interior dimensions of 12.08'x5.08'x15" deep. The enclosure was mounted vertically on one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from a wooden plank inside the enclosure with an approximate 1" clearance from the top of same enclosure. Clearances between the plywood enclosure and the reverberation room's wall and floor were sealed with 2" wide duct tape and duct sealer ("plumber's putty").

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, **clips were placed along the entire specimen's width so that there were no empty spaces between them. This dense clip arrangement prevented sound to move easily between the 11" segments.** Actual specimen dimensions were 12'x5'x3". The specimen weight was 44 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at 6" from the back wall of the enclosure.

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (11" segments), with dense spacer clip arrangement, hung inside an enclosure

Freq. Hz	Specimen Distance from Wall
	6" [5]
	Absorption Coefficient
50	0.14
63	-0.03
80	0.69
100	0.53
125	0.76
160	0.79
200	0.77
250	1.12
315	1.05
400	1.05
500	0.98
630	1.00
800	1.01
1000	1.02
1250	1.02
1600	1.01
2000	1.02
2500	1.00
3150	1.03
4000	1.07
5000	1.09
6300	1.12
8000	1.20
10000	1.33
NRC[1]	1.05
SAA[2]	1.00
Spec. Face Area[4], Sq. Ft.	60.00
Test Environment Conditions[3]	
Temp (°F)	74/73.5
Humid (%)	54/49
BP (%)	30.45/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calcula of absorp. Coeff.
[5] Distance to rear of specimen.

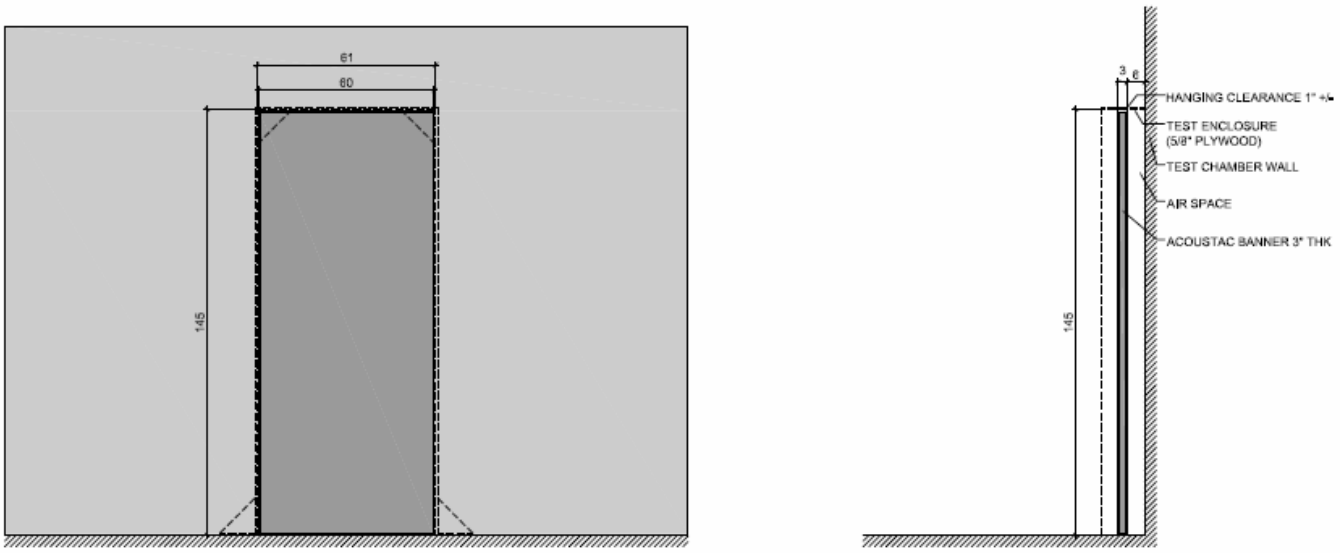

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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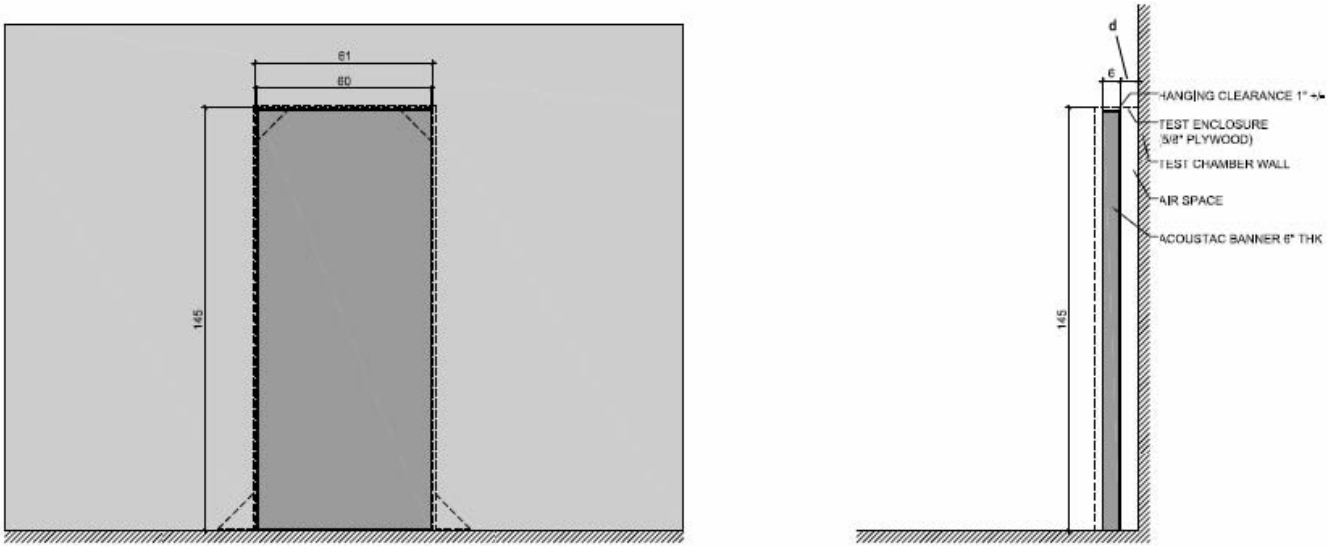
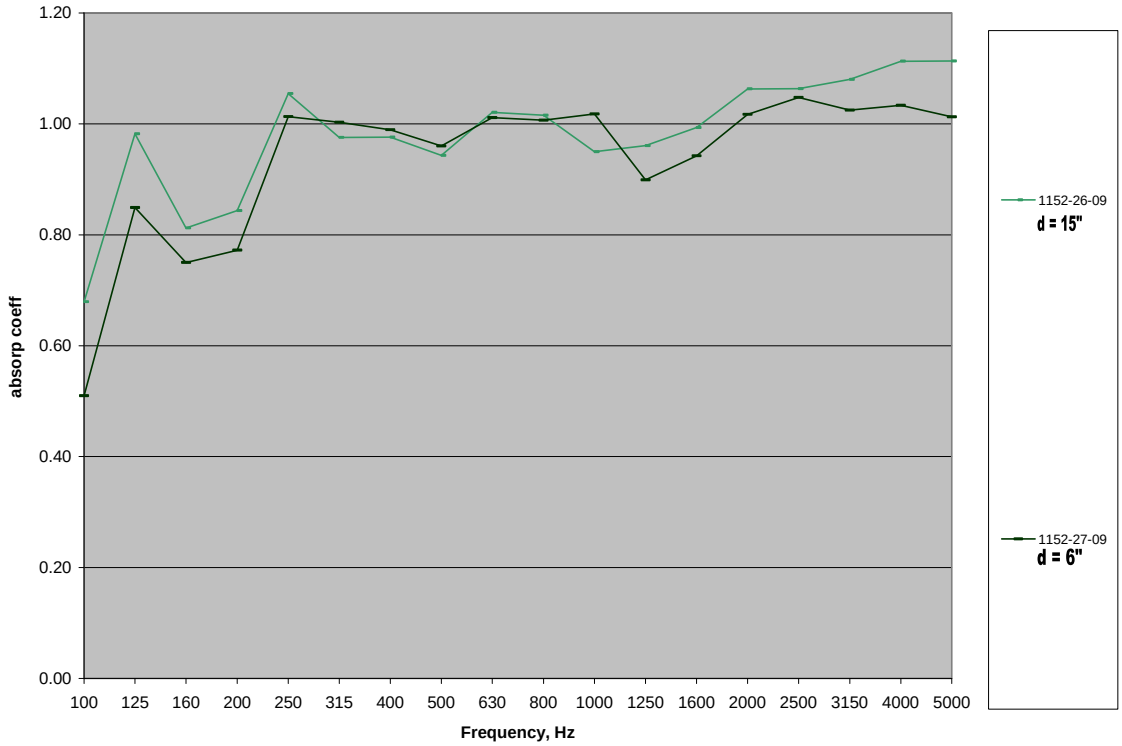
acouStaCorp

Test 76007312: One 6” thick ACOUSTAC Wool Banner (11” segments) hung inside an enclosure



Notes:
1) 6” thick Specimen tested at two different distances, d, from wall: d=6” and d=9” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-12 **Date:** 7/10/2009

Specimen: **One 6" thk ACOUSTAC Wool Banner (11" segments) hung inside an enclosure**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung inside a 5/8" thick plywood enclosure with interior dimensions of 12.08'x5.08'x15" deep. The enclosure was mounted vertically on one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from a wooden plank inside the enclosure with an approximate 1" clearance from the top of same enclosure. Clearances between the plywood enclosure and the reverberation room's wall and floor were sealed with 2" wide duct tape and duct sealer ("plumber's putty").

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 6" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x6". The specimen weight was 45 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the back wall of the enclosure:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (9" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

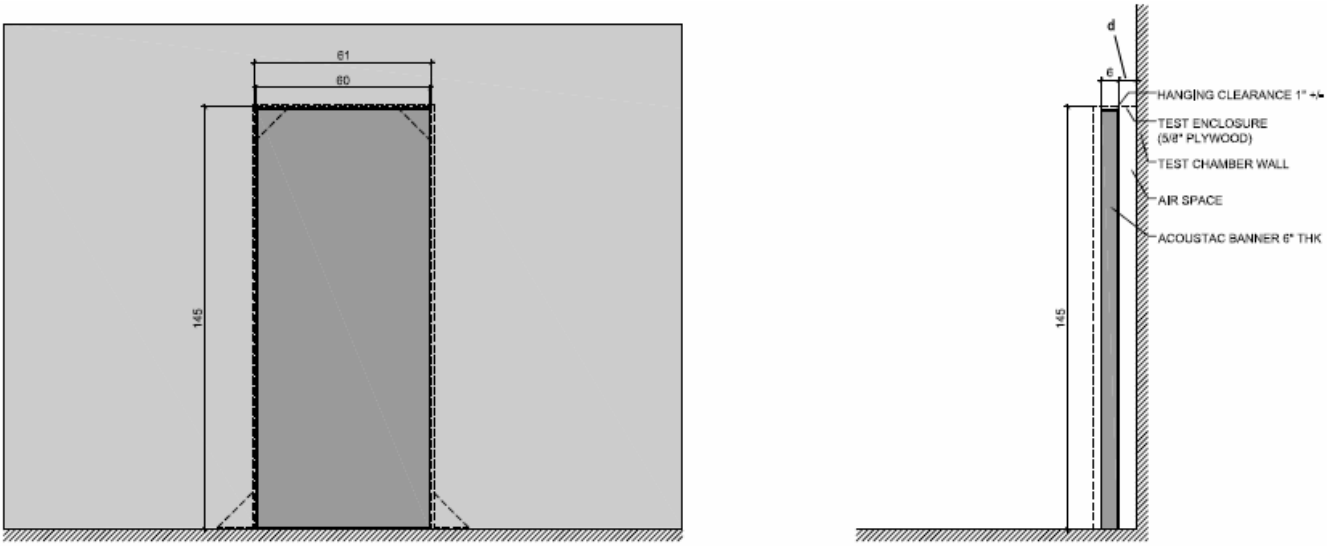
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 6" thk ACOUSTAC Wool Banner (11" segments) hung inside an enclosure

Freq. Hz	Specimen Distance from Back Wall of Enclosure	
	6" [5]	15" [6]
	Absorption Coefficient	
50	-0.12	0.19
63	0.08	-0.08
80	0.84	1.16
100	0.51	0.68
125	0.85	0.98
160	0.75	0.81
200	0.77	0.84
250	1.01	1.05
315	1.00	0.98
400	0.99	0.98
500	0.96	0.94
630	1.01	1.02
800	1.01	1.02
1000	1.02	0.95
1250	0.90	0.96
1600	0.94	0.99
2000	1.02	1.06
2500	1.05	1.06
3150	1.02	1.08
4000	1.03	1.11
5000	1.01	1.11
6300	1.00	1.15
8000	0.97	1.19
10000	0.96	1.34
NRC[1]	1.00	1.00
SAA[2]	0.97	0.99
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	73.5/72.5	74/73.5
Humid (%)	55/56	54/48
BP (%)	30.4/30.4	30.45/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.
[5] Distance to rear of specimen.
[6] Distance to front of specimen.



Notes:
1) 6" thk Specimen tested at two different distances, d, from wall: d=6" and d=9" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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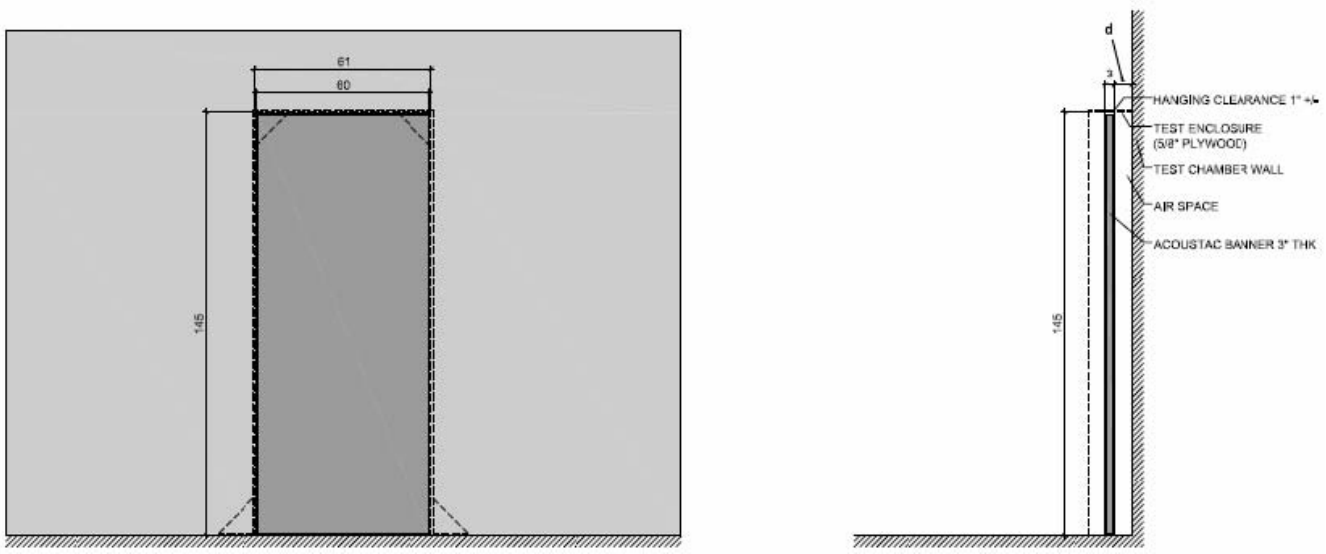
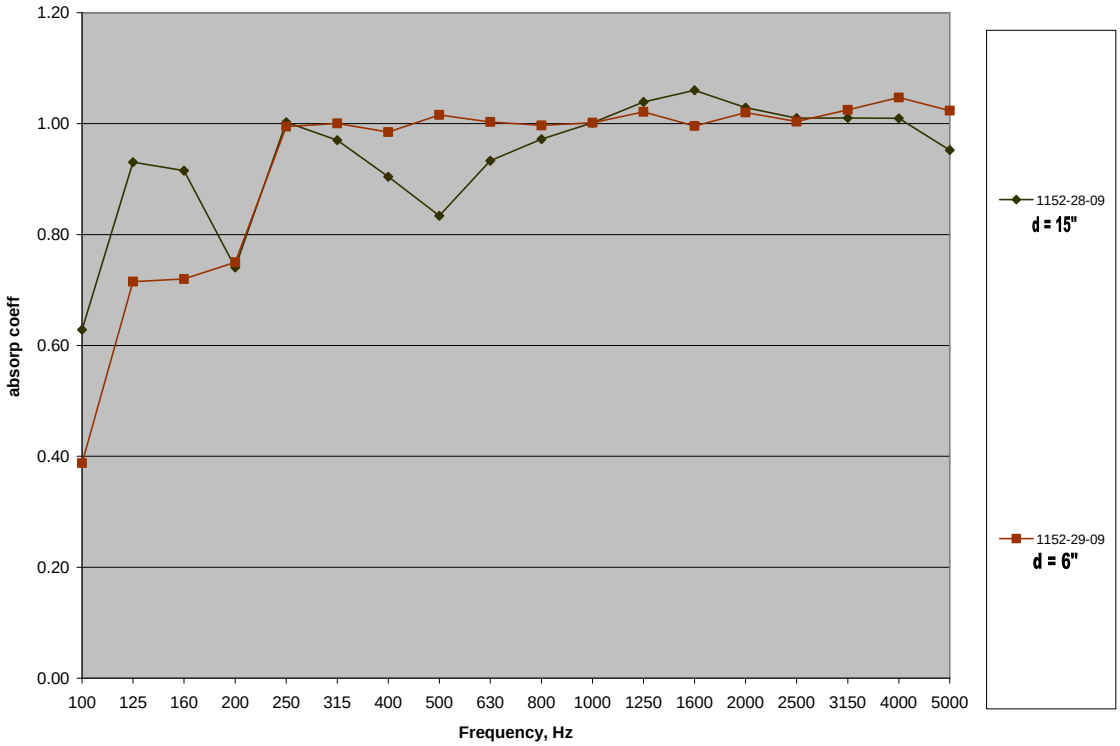
acouStaCorp

Test 76007313: One 3” thick ACOUSTAC Wool Banner (11” segments) hung inside an enclosure



Notes:
1) 3” thick Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Accredited by the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, **NATIONAL VOLUNTARY LAB ACCREDITATION PROGRAM** (Lab code 100404-0) FOR ACOUSTICAL TESTING SERVICES (selected test methods)

Laboratory Report No : 76-0073-13 **Date:** 7/10/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (11" segments) hung inside an enclosure**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung inside a 5/8" thick plywood enclosure with interior dimensions of 12.08'x5.08'x15" deep. The enclosure was mounted vertically on one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from a wooden plank inside the enclosure with an approximate 1" clearance from the top of same enclosure. Clearances between the plywood enclosure and the reverberation room's wall and floor were sealed with 2" wide duct tape and duct sealer ("plumber's putty").

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the back wall of the enclosure:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

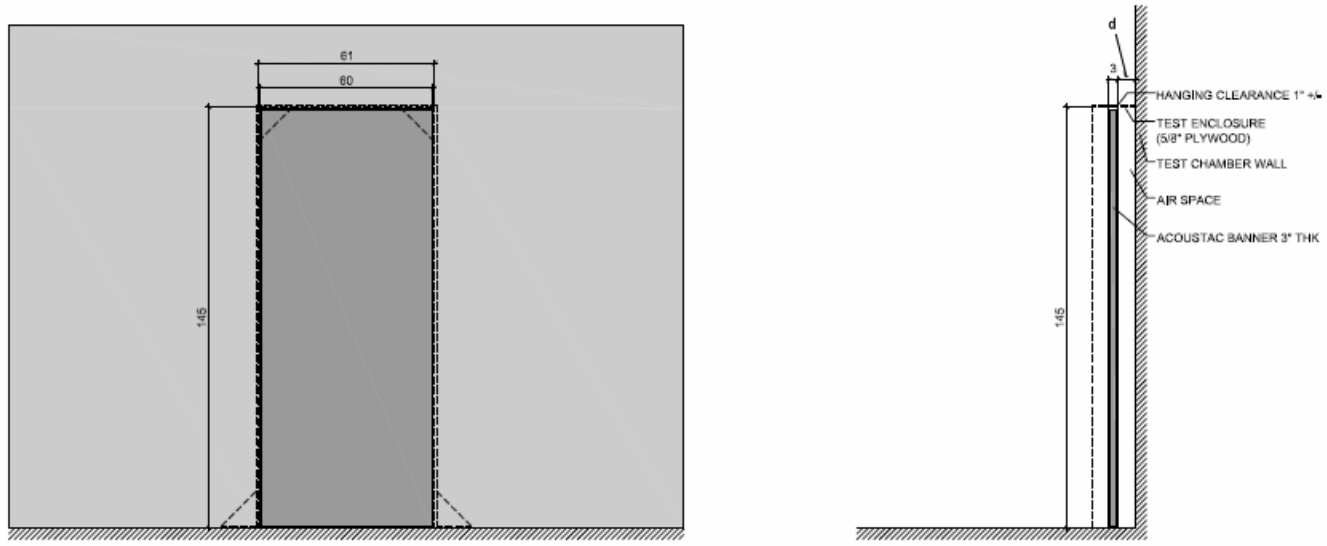
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (11" segments) hung inside an enclosure

Freq. Hz	Specimen Distance from Back Wall of Enclosure	
	6" [5]	15" [6]
	Absorption Coefficient	
50	-0.05	-0.05
63	0.18	0.32
80	0.72	1.50
100	0.39	0.63
125	0.71	0.93
160	0.72	0.92
200	0.75	0.74
250	0.99	1.00
315	1.00	0.97
400	0.98	0.90
500	1.02	0.83
630	1.00	0.93
800	1.00	0.97
1000	1.00	1.00
1250	1.02	1.04
1600	1.00	1.06
2000	1.02	1.03
2500	1.00	1.01
3150	1.02	1.01
4000	1.05	1.01
5000	1.02	0.95
6300	1.01	0.90
8000	1.00	0.82
10000	0.94	0.72
NRC[1]	1.00	0.95
SAA[2]	0.98	0.96
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	73.5/73	73.5/73
Humid (%)	55/54	55/54
BP (%)	30.4/30.4	30.4/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.
[5] Distance to rear of specimen.
[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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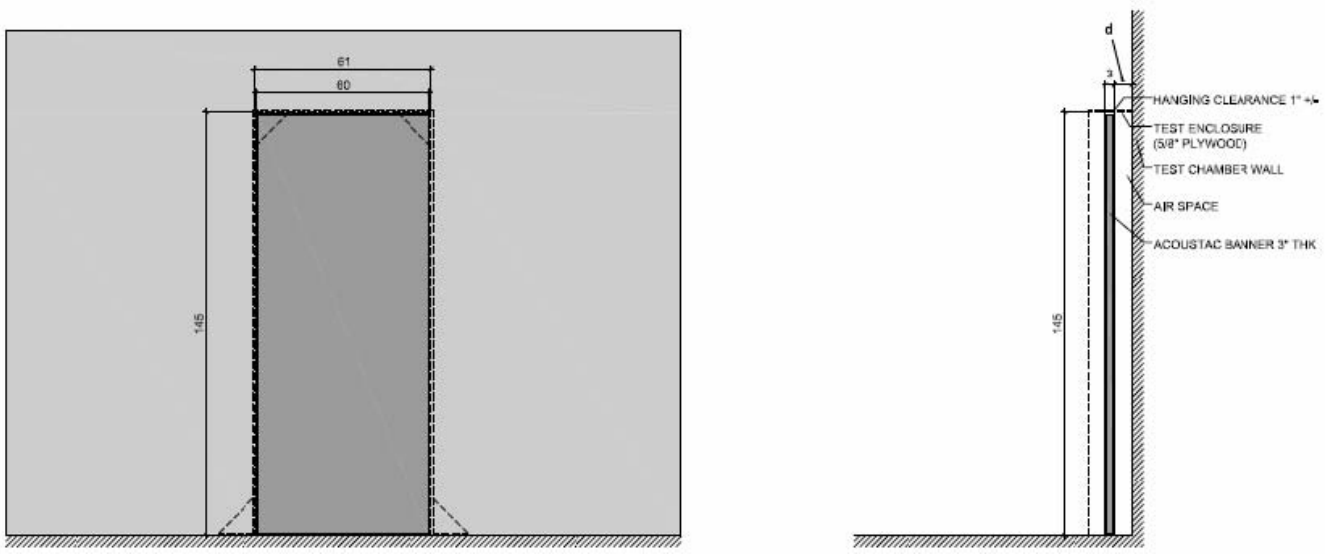
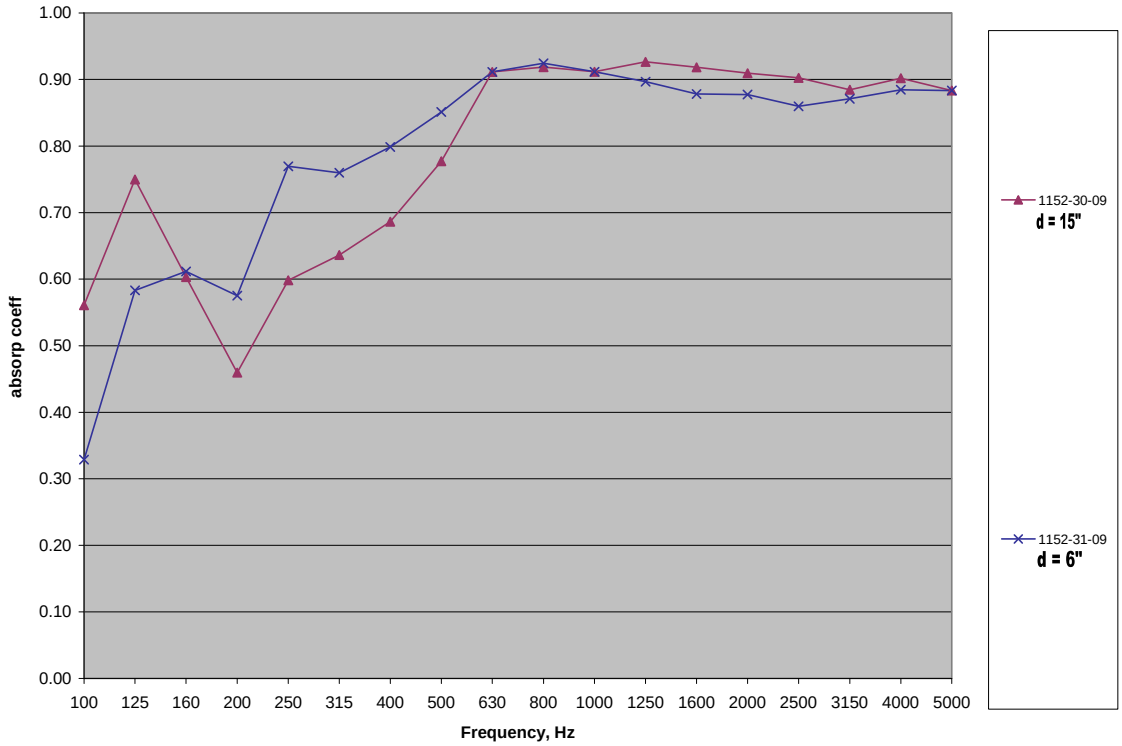
acouStaCorp

Test 76007314: One 3” thick ACOUSTAC Velour Banner (11” segments) hung inside an enclosure



Notes:
1) 3” thick Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-14 **Date:** 7/10/2009

Specimen: **One 3" thk ACOUSTAC Velour Banner (11" segments) hung inside an enclosure**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic velour banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung inside a 5/8" thick plywood enclosure with interior dimensions of 12.08'x5.08'x15" deep. The enclosure was mounted vertically on one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from a wooden plank inside the enclosure with an approximate 1" clearance from the top of same enclosure. Clearances between the plywood enclosure and the reverberation room's wall and floor were sealed with 2" wide duct tape and duct sealer ("plumber's putty").

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of velour fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 11" along the height of the specimen. At each seam between 11" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 11" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 39.5 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the back wall of the enclosure:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

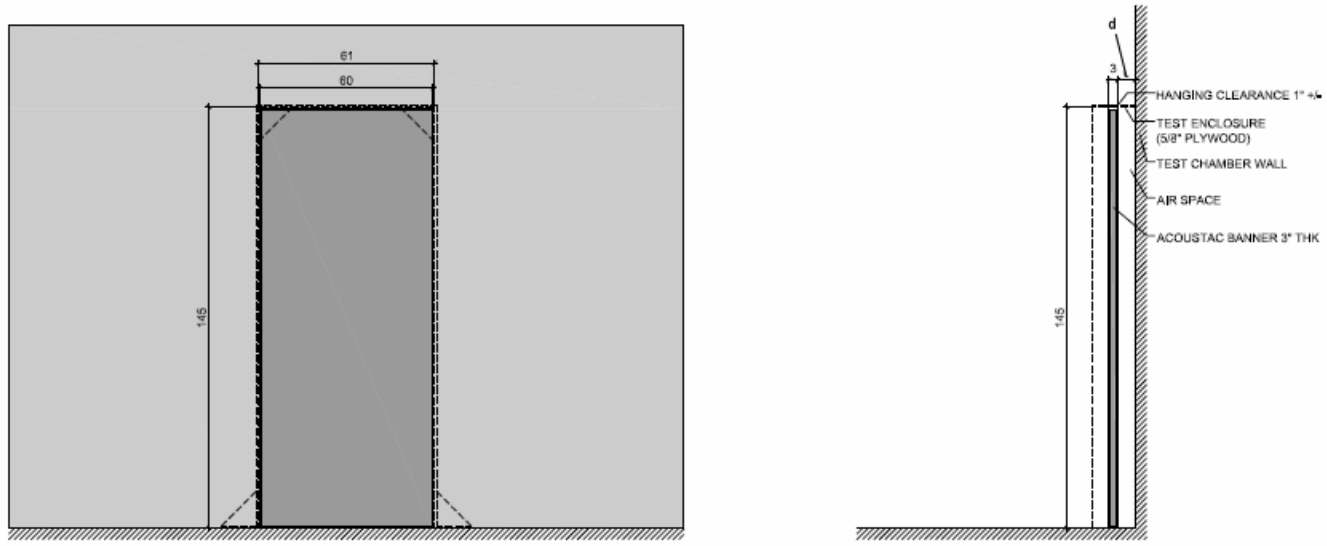
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Velour Banner (11" segments) hung inside an enclosure

Freq. Hz	Specimen Distance from Back Wall of Enclosure	
	6" [5]	15" [6]
	Absorption Coefficient	
50	-0.21	-0.12
63	0.13	0.21
80	0.61	1.35
100	0.33	0.56
125	0.58	0.75
160	0.61	0.60
200	0.58	0.46
250	0.77	0.60
315	0.76	0.64
400	0.80	0.69
500	0.85	0.78
630	0.91	0.91
800	0.92	0.92
1000	0.91	0.91
1250	0.90	0.93
1600	0.88	0.92
2000	0.88	0.91
2500	0.86	0.90
3150	0.87	0.88
4000	0.88	0.90
5000	0.88	0.88
6300	0.94	0.90
8000	0.88	0.94
10000	1.05	0.94
NRC[1]	0.85	0.80
SAA[2]	0.83	0.80
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	73.5/73	73.5/73
Humid (%)	55/54	55/54
BP (%)	30.4/30.4	30.4/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.
[5] Distance to rear of specimen.
[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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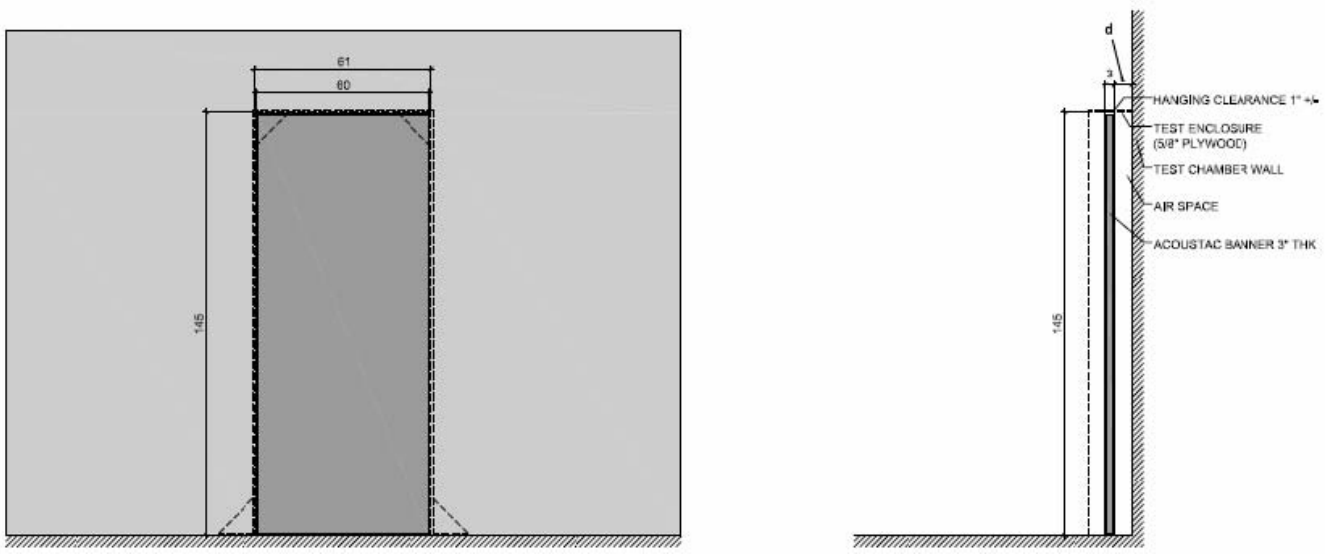
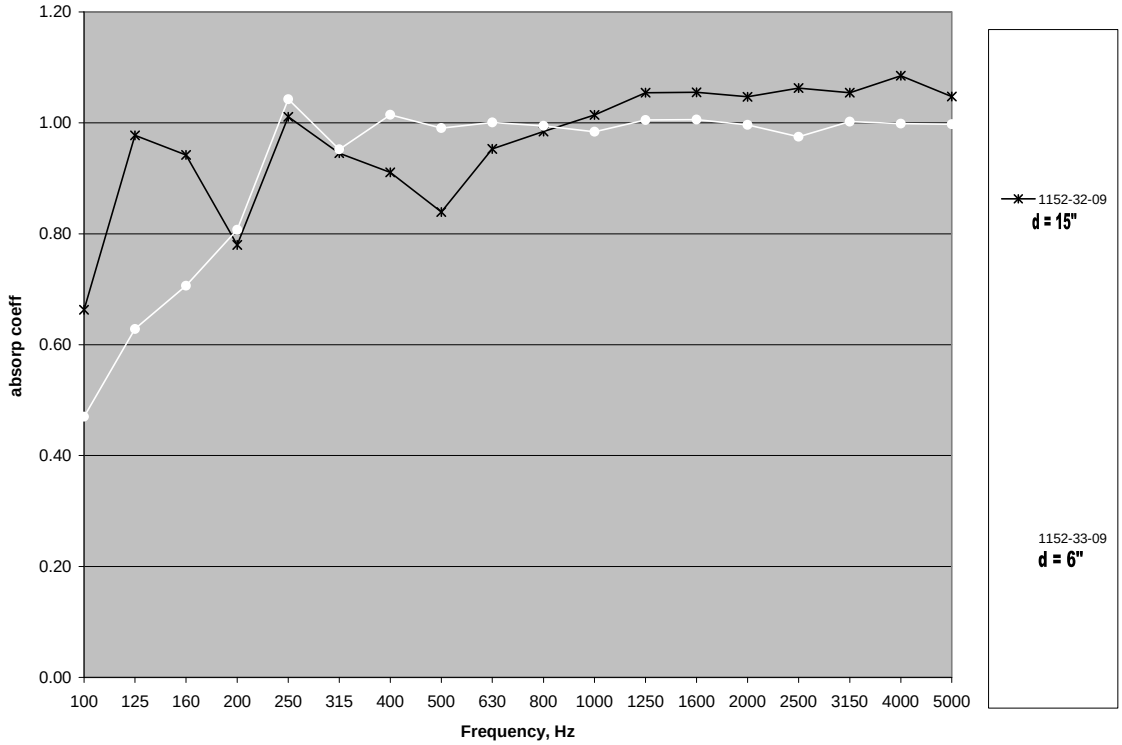
acouStaCorp

Test 76007315: One 3” thick ACOUSTAC Wool Banner (15” segments) hung inside an enclosure



Notes:
1) 3” thick Specimen tested at two different distances, d, from wall: d=6” and d=12” (15” from front of specimen)

Figure 1: Specimen Layout inside Test Room



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Laboratory Report No : 76-0073-15 **Date:** 7/10/2009

Specimen: **One 3" thk ACOUSTAC Wool Banner (15" segments) hung inside an enclosure**

Client Acoustacorp, LLC
704 E. 133rd Street / Bronx, NY, 10454

Test Type / Standard : Sound Absorption Coefficient by Reverberation Room Method (ASTM C423-08a)

Objective: Obtain random-incidence absorption coefficient for specimen.

Description :

A drapery specimen described as "ACOUSTAC acoustic wool banner" by the client was tested inside IAC's 10,000 cu.ft. reverberation room. The specimen consisted of one 12'x5' ACOUSTAC curtain specimen provided by the client. The specimen was hung inside a 5/8" thick plywood enclosure with interior dimensions of 12.08'x5.08'x15" deep. The enclosure was mounted vertically on one of the reinforced steel walls of the reverberation room. The drapery specimen was hung from a wooden plank inside the enclosure with an approximate 1" clearance from the top of same enclosure. Clearances between the plywood enclosure and the reverberation room's wall and floor were sealed with 2" wide duct tape and duct sealer ("plumber's putty").

A visual inspection determined that the ACOUSTAC specimen consisted of a drapery made of two parallel layers of wool fabric, spaced 3" apart via 4" long plastic spacer clips. The spacer clips were placed every 15" along the height of the specimen. At each seam between 15" segments, three clips were placed along the specimen's width (one in the center, two 4" from the ends). The space between the clips was left empty, allowing sound to move between the 15" segments. Actual specimen dimensions were 12'x5'x3". The specimen weight was 31 lbs. Further design and construction details are the proprietary information of the client.

The specimen was hung and tested at two different distances from the back wall of the enclosure:

1. **6" from the rear of the specimen**
2. **15" from the front of the specimen (12" from the rear)**

IAC's reverberation chamber is of reinforced steel construction with a rectangular shape and an approximate volume of 10,000 cu.ft. and total surface area of 3,000 sq.ft. Three 8'x4' diffusers (both faces are reflective) are placed throughout the chamber for sound diffusion purposes. The sound field was sampled with a rotating microphone (60" radius) and a broadband "pink" noise signal.

Test results are listed in Table 1.

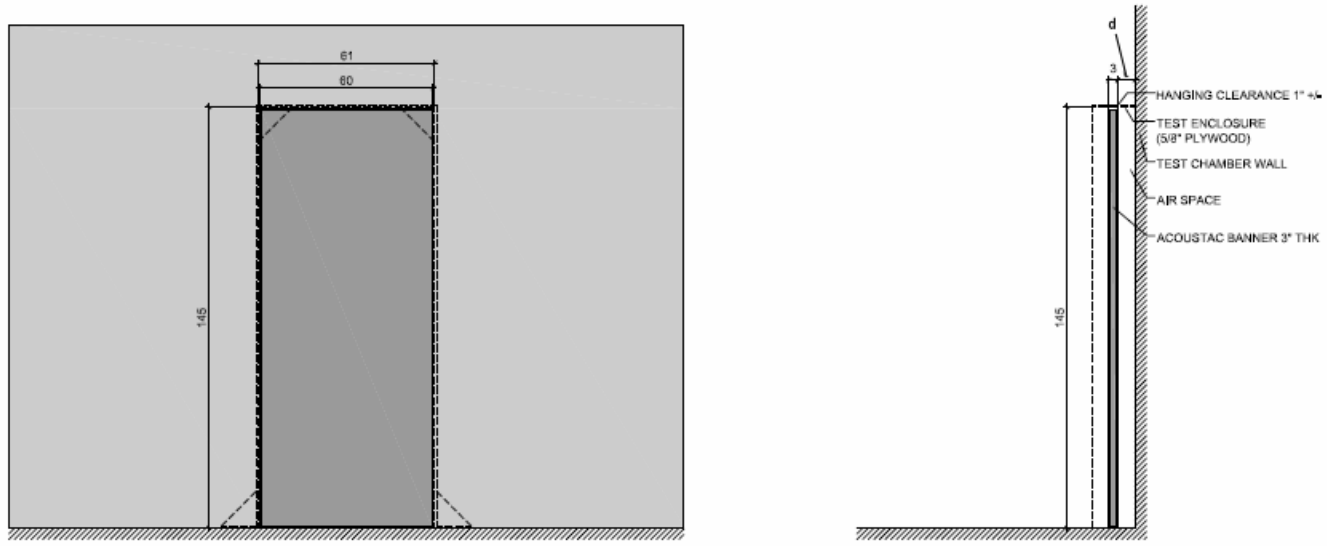
Remarks:

1. The measurements of absorption coefficients were made in accordance with the American Society for Testing and Materials (ASTM) standard C423-08a. A description of the facilities and instrumentation is available from IAC upon request.
2. The following deviations were taken from the test procedure described in ASTMC423-08a:
   a. Measurements were taken at frequencies below 100 Hz and above 5,000 Hz. Measurements below 100 Hz (and especially at 50 Hz) fall outside the laboratory's scope of accreditation and are provided here for information purposes only.
3. The repeatability and reproducibility values for the ASTM C423-08a test method are listed in that standard's Section 13 (Table 2).

Table 1: Absorption Test Results for One 3" thk ACOUSTAC Wool Banner (15" segments) hung inside an enclosure

Freq. Hz	Specimen Distance from Back Wall of Enclosure	
	6" [5]	15" [6]
	Absorption Coefficient	
50	0.05	-0.12
63	-0.16	0.35
80	0.62	1.45
100	0.47	0.66
125	0.63	0.98
160	0.71	0.94
200	0.81	0.78
250	1.04	1.01
315	0.95	0.95
400	1.01	0.91
500	0.99	0.84
630	1.00	0.95
800	0.99	0.98
1000	0.98	1.01
1250	1.00	1.05
1600	1.01	1.05
2000	1.00	1.05
2500	0.97	1.06
3150	1.00	1.05
4000	1.00	1.08
5000	1.00	1.05
6300	0.99	1.08
8000	0.96	1.12
10000	0.98	1.05
NRC[1]	1.00	1.00
SAA[2]	0.98	0.97
Spec. Face Area[4], Sq. Ft.	60.00	
Test Environment Conditions[3]		
Temp (°F)	74/73	73.5/73
Humid (%)	54/54	55/54
BP (%)	30.45/30.45	30.4/30.4

[1]Noise Reduction Coefficient, NRC, per ASTM C423.
[2]Sound Absorption Coefficient, SAA, per ASTM C423.
[3]Test environment conditions listed were those present during empty room measurements and during specimen measurement respectively (e.g., "empty room temp/room with specimen temp.")
[4] Surface area of one face of specimen also used for calculation of absorp. Coeff.
[5] Distance to rear of specimen.
[6] Distance to front of specimen.



Notes:
1) 3" thk Specimen tested at two different distances, d, from wall: d=6" and d=12" (15" from front of specimen)

Figure 1: Specimen Layout inside Test Room

Report Prepared by:

Victor Clemente, Test Engineer

Approved by:

Jon Weinstein, Lab Director

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