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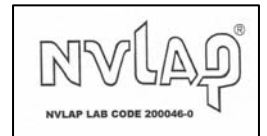
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SOUND ABSORPTION TESTING CONDUCTED ON F-Sorb 2" 5 lb Density

Forrest Sound Products
15115 NE 90th St. Suite A
Redmond, WA 98052

Date: September 30, 2013
Author: John Wegscheider
Report Number: ESP014760P-2

Customer PO: 13-901-F



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Ear Controlled Data

Noise Reduction Coefficient (ASTM C423-09a)

INTRODUCTION:

This report presents the results of acoustical testing of 2" 5 lb Density F-Sorb. This testing was requested by Mr. Doug Bixel of Forrest Sound Products and was conducted on September 25th, 2013.

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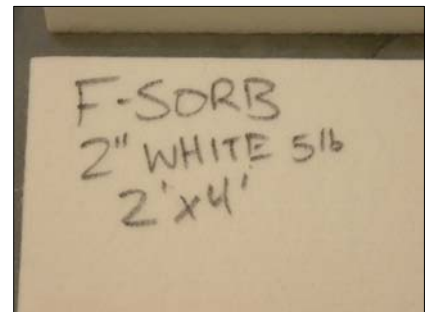
TEST RESULTS SUMMARY:

<i>Noise Reduction Coefficient (NRC) Test Type A Mount</i>				Test Results		
Test #	Sample Identification	Total Weight (lbs)	Weight (psf)	NRC	SAA	--
2	F-Sorb 2" 5 lb Density	59.2	0.8	1.05	1.01	--

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

SPECIMEN DESCRIPTION: (Also see "Test Results")

The material was identified as 2", 5 lb Density F-Sorb. The overall sample size was 72 ft² and consisted of (8) 24"x48" Samples and (2) 12"x48" Samples and weighed a total of 59.2lbs. The Sample was mounted on the floor (Type A). A 2" Space or Reveal was between samples.



TEST PROCEDURE AND EQUIPMENT:

Sound Absorption Test

ASTM C 423-09a, "Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method", was followed in every respect. The F-Sorb samples were placed on the floor in a Type A mounting method with a 2" space between panels.

NRC was calculated by rounding the sound absorption coefficients for 250, 500, 1000 and 2000 Hz to the nearest 0.05. SAA was calculated by rounding the sound absorption coefficients for the twelve frequencies from 200 Hz to 2500 Hz to the nearest 0.01.

TEST EQUIPMENT:

Item Description	ID #	Manufacturer/Model	Serial #	Calibration Due	Location
1/2" Pressure Condenser Microphone	PT-162-075	GRAS/40AD	19220-1244	5/19/14	Reverberation Chamber
Microphone Calibrator	PT-162-076	Norsonic/1251	29144	5/29/14	N/A
Data Acquisition Module	PT-162-107	National Instruments/NI9234	195551B-01L	8/27/14	Control Center
Temp and Humidity Transmitter	PT-162-077	Dwyer Instruments/Series RH	M90714-E4SV-Y	5/22/14	Reverberation Chamber

Test Data:

SOUND ABSORPTION
ASTM C423

General Information

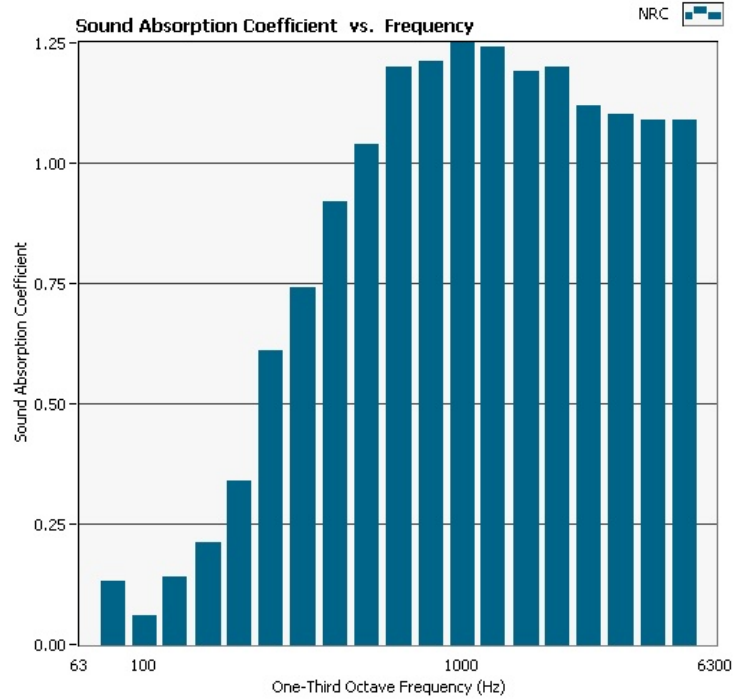
Project No:	ESP-014760P Forrest Sound Products-2
Customer:	Forrest Sound Products
Test Date:	09-24-2013
Specimen ID:	F-Sorb 2 in Light Grey
Specimen Description:	2" 5 LB
Specimen Dimensions - Area:	96.00" W x 108.00" H - 72.00 ft ²
Operator:	JMW

Data Table

	absorption empty (m ²)	absorption * sample (m ²)	Absorption Coefficient
80	3.74	0.86	0.13
100	5.29	0.43	0.06
125	3.91	0.97	0.14
160	3.62	1.42	0.21
200	3.96	2.28	0.34
250	3.64	4.11	0.61
315	3.66	4.95	0.74
400	3.73	6.17	0.92
500	4.20	6.99	1.04
630	4.38	8.01	1.20
800	4.82	8.11	1.21
1000	4.94	8.45	1.26
1250	5.61	8.28	1.24
1600	6.28	7.97	1.19
2000	7.11	8.04	1.20
2500	7.92	7.50	1.12
3150	9.08	7.39	1.10
4000	10.78	7.26	1.09
5000	13.13	7.27	1.09

Room Conditions

Temperature	20.3 °C
R.H.	51 %
ATM	969 hPa



NRC
1.05

SAA
1.01

* based on an extended plane area of 72.00 ft²



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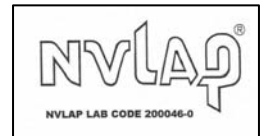
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SOUND ABSORPTION TESTING CONDUCTED ON F-Sorb 1" 7.5 lb Density

Forrest Sound Products
15115 NE 90th St. Suite A
Redmond, WA 98052

Date: September 30, 2013
Author: John Wegscheider
Report Number: ESP014760P-3

Customer PO: 13-901-F



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Ear Controlled Data

Noise Reduction Coefficient (ASTM C423-09a)

INTRODUCTION:

This report presents the results of acoustical testing of 1" 7.5 lb Density F-Sorb. This testing was requested by Mr. Doug Bixel of Forrest Sound Products and was conducted on September 25th, 2013.

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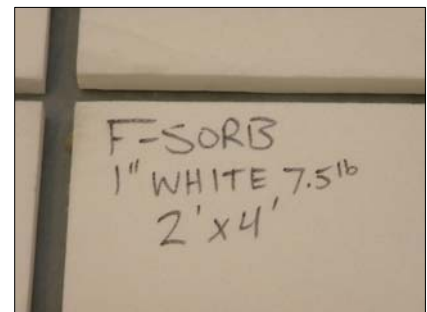
TEST RESULTS SUMMARY:

<i>Noise Reduction Coefficient (NRC) Test Type A Mount</i>				Test Results		
Test #	Sample Identification	Weight (lbs)	Weight (psf)	NRC	SAA	--
3	F-Sorb 1" 7.5 lb Density	43.0	0.6	0.70	0.69	--

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

SPECIMEN DESCRIPTION: (Also see "Test Results")

The material was identified as 1", 7.5 lb Density F-Sorb. The overall sample size was 72 ft² and consisted of (8) 24"x48" Samples and (2) 12"x48" Samples and weighed a total of 43lbs. The Sample was mounted on the floor (Type A). A 1" Space or Reveal was between samples.



TEST PROCEDURE AND EQUIPMENT:

Sound Absorption Test

ASTM C 423-09a, "Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method", was followed in every respect. The F-Sorb samples were placed on the floor in a Type A mounting method with a 1" space between panels.

NRC was calculated by rounding the sound absorption coefficients for 250, 500, 1000 and 2000 Hz to the nearest 0.05. SAA was calculated by rounding the sound absorption coefficients for the twelve frequencies from 200 Hz to 2500 Hz to the nearest 0.01.

TEST EQUIPMENT:

Item Description	ID #	Manufacturer/Model	Serial #	Calibration Due	Location
1/2" Pressure Condenser Microphone	PT-162-075	GRAS/40AD	19220-1244	5/19/14	Reverberation Chamber
Microphone Calibrator	PT-162-076	Norsonic/1251	29144	5/29/14	N/A
Data Acquisition Module	PT-162-107	National Instruments/NI9234	195551B-01L	8/27/14	Control Center
Temp and Humidity Transmitter	PT-162-077	Dwyer Instruments/Series RH	M90714-E4SV-Y	5/22/14	Reverberation Chamber

Test Data:

SOUND ABSORPTION
ASTM C423

General Information

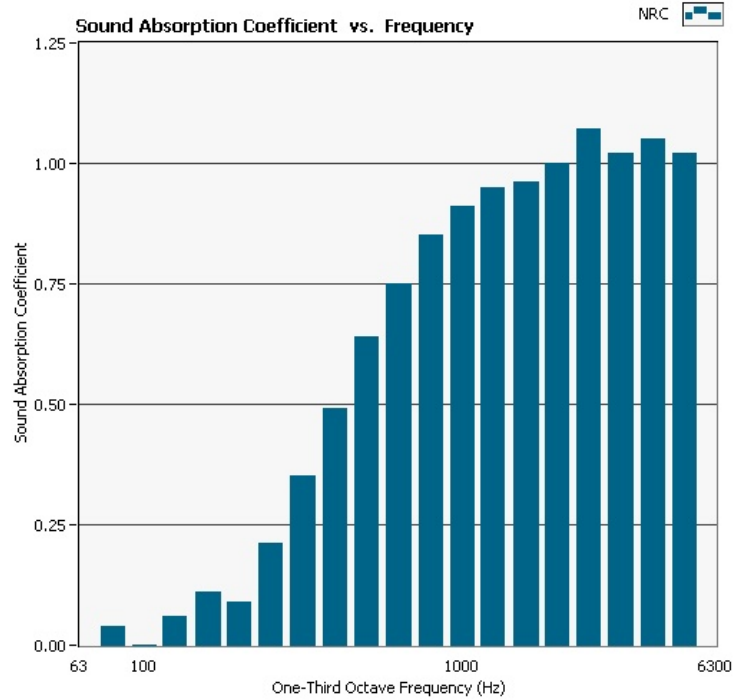
Project No:	ESP-014760P Forrest Sound Products-3
Customer:	Forrest Sound Products
Test Date:	09-24-2013
Specimen ID:	F-Sorb 1 in White
Specimen Description:	1" 7-5 LB
Specimen Dimensions - Area:	96.00" W x 108.00" H - 72.00 ft²
Operator:	JMW

Data Table

	absorption empty (m²)	absorption * sample (m²)	Absorption Coefficient
80	3.74	0.24	0.04
100	5.29	0.00	0.00
125	3.91	0.43	0.06
160	3.62	0.71	0.11
200	3.96	0.60	0.09
250	3.64	1.41	0.21
315	3.66	2.34	0.35
400	3.73	3.25	0.49
500	4.20	4.27	0.64
630	4.38	5.02	0.75
800	4.82	5.66	0.85
1000	4.94	6.07	0.91
1250	5.61	6.34	0.95
1600	6.28	6.40	0.96
2000	7.11	6.70	1.00
2500	7.92	7.15	1.07
3150	9.08	6.80	1.02
4000	10.78	7.02	1.05
5000	13.13	6.81	1.02

Room Conditions

Temperature	20.3 °C
R.H.	51 %
ATM	969 hPa



NRC
0.70

SAA
0.69

* based on an extended plane area of 72.00 ft²



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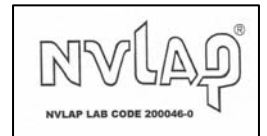
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SOUND ABSORPTION TESTING CONDUCTED ON F-Sorb 1" 7.5 lb Density

Forrest Sound Products
15115 NE 90th St. Suite A
Redmond, WA 98052

Date: September 30, 2013
Author: John Wegscheider
Report Number: ESP014760P-8

Customer PO: 13-901-F



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Ear Controlled Data

Noise Reduction Coefficient (ASTM C423-09a)

INTRODUCTION:

This report presents the results of acoustical testing of 1" 7.5 lb Density F-Sorb. This testing was requested by Mr. Doug Bixel of Forrest Sound Products and was conducted on September 25th, 2013.

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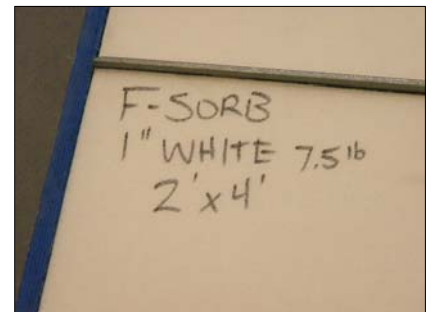
TEST RESULTS SUMMARY:

<i>Noise Reduction Coefficient (NRC) Test Type E Mount</i>				Test Results		
Test #	Sample Identification	Total Weight (lbs)	Weight (psf)	NRC	SAA	--
8	F-Sorb 1" 7.5 lb Density	43.0	0.6	0.90	0.88	--

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

SPECIMEN DESCRIPTION: (Also see "Test Results")

The material was identified as 1", 7.5 lb Density F-Sorb. The overall sample size was 72 ft² and consisted of (8) 24"x48" Samples and (2) 12"x48" Samples and weighed a total of 43 lbs. The Sample was mounted in the E400 Method.



TEST PROCEDURE AND EQUIPMENT:

Sound Absorption Test

ASTM C 423-09a, "Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method", was followed in every respect. The F-Sorb samples were placed in the E400 Method.

NRC was calculated by rounding the sound absorption coefficients for 250, 500, 1000 and 2000 Hz to the nearest 0.05. SAA was calculated by rounding the sound absorption coefficients for the twelve frequencies from 200 Hz to 2500 Hz to the nearest 0.01.

TEST EQUIPMENT:

Item Description	ID #	Manufacturer/Model	Serial #	Calibration Due	Location
1/2" Pressure Condenser Microphone	PT-162-075	GRAS/40AD	19220-1244	5/19/14	Reverberation Chamber
Microphone Calibrator	PT-162-076	Norsonic/1251	29144	5/29/14	N/A
Data Acquisition Module	PT-162-107	National Instruments/NI9234	195551B-01L	8/27/14	Control Center
Temp and Humidity Transmitter	PT-162-077	Dwyer Instruments/Series RH	M90714-E4SV-Y	5/22/14	Reverberation Chamber

Test Data:

SOUND ABSORPTION
ASTM C423

General Information

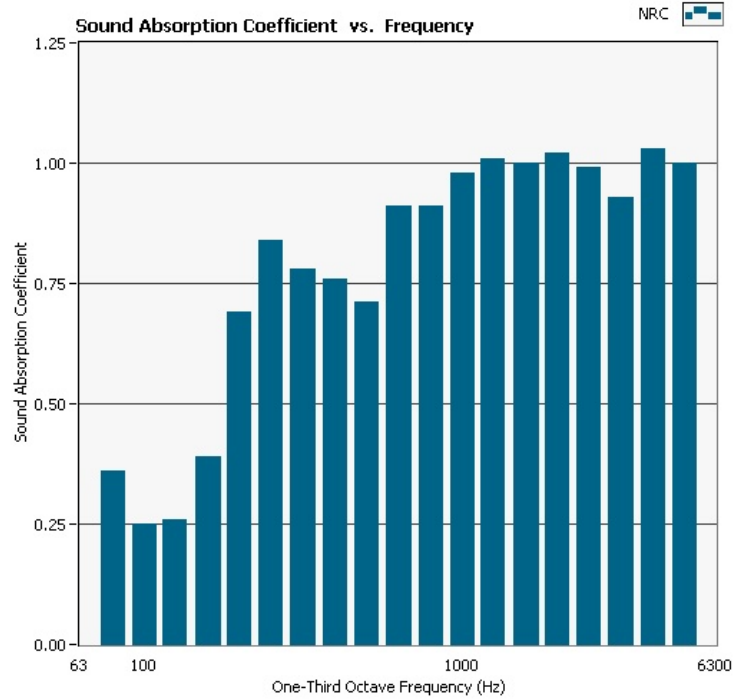
Project No:	ESP-014760P Forrest Sound Products-8
Customer:	Forrest Sound Products
Test Date:	09-24-2013
Specimen ID:	F-Sorb 1 in White
Specimen Description:	1" 7.5 lb Type E Mount
Specimen Dimensions - Area:	96.00" W x 108.00" H - 72.00 ft²
Operator:	JMW

Data Table

	absorption empty (m²)	absorption * sample (m²)	Absorption Coefficient
80	3.74	2.44	0.36
100	5.29	1.65	0.25
125	3.90	1.75	0.26
160	3.62	2.61	0.39
200	3.96	4.59	0.69
250	3.64	5.63	0.84
315	3.66	5.23	0.78
400	3.73	5.08	0.76
500	4.20	4.72	0.71
630	4.38	6.05	0.91
800	4.82	6.09	0.91
1000	4.94	6.54	0.98
1250	5.60	6.78	1.01
1600	6.28	6.71	1.00
2000	7.11	6.84	1.02
2500	7.91	6.65	0.99
3150	9.08	6.24	0.93
4000	10.77	6.90	1.03
5000	13.12	6.66	1.00

Room Conditions

Temperature	20.5 °C
R.H.	53 %
ATM	967 hPa



NRC
0.90

SAA
0.88

* based on an extended plane area of 72.00 ft²