Title: Sound Absorption Test Results

Product: 2" Poly Max Baffle - 24" Depth spaced 24" on-center

Application: Ceiling Baffle

Testing Standard: ASTM C423-17 (Type J Mount)

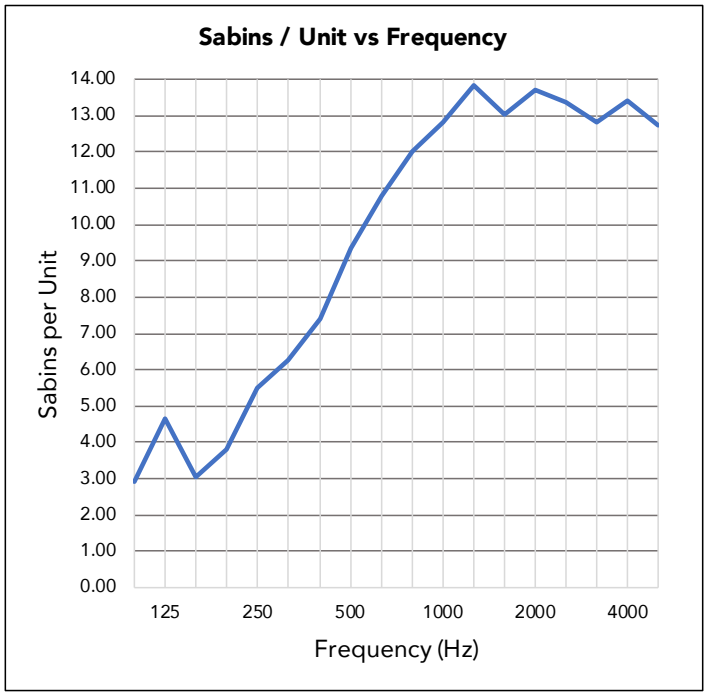
Test Date: 4/19/2021

Why this test: This test evaluates a products efficiency of absorbing sound at multiple frequencies. The test simulates the product's acoustical performance when suspended in a baffle configuration. Results are presented in Sabins per Unit, a unit of absorption commonly used for spaced suspended panels. The Average Sabins per Unit is average Sabin per Unit at NRC frequencies (250 Hz, 500 Hz, 1000 Hz, 2000 Hz).

Test Result Summary: Average Sabins per Unit - 10.35

Avg. Sabins per Unit
10.35

Frequency (Hz)	Sabins / Unit
100	2.91
125	4.65
160	3.03
200	3.80
250	5.49
315	6.26
400	7.41
500	9.36
630	10.80
800	12.02
1000	12.81
1250	13.83
1600	13.02
2000	13.72
2500	13.35
3150	12.83
4000	13.40
5000	12.74



Test ID: ESP035429P-28

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SOUND ABSORPTION TESTING CONDUCTED ON 2" POLYESTER ACOUSTIC BAFFLE

ASI
123 Columbia Court, N.
Chaska, MN 55318

Date: April 27, 2021
Author: Mark Coopet
Report Number: ESP035429P-28 R1

Customer PO: 00081905

Noise Reduction Coefficient (ASTM C423-17)

INTRODUCTION:

This report presents the results of acoustical testing of 2” Polyester Acoustic Baffles. This testing was requested by Mr. Joe Satek and was completed on April 19, 2021.

This report must not be reproduced except in full without the approval of Element Materials Technology. The test results contained in this report pertain only to the specific assemblies tested and not necessarily to all similar constructions.

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

TEST RESULTS SUMMARY:

Noise Reduction Coefficient (NRC) Test				Test Results		
Test #	**Sample Identification**	**Weight (lbs)**	**Weight (psf)**	**NRC**	**SAA**	**--**
28	J Mount – 2" Polyester Acoustic Baffle	33	0.46	***0.55***	***0.56***	--

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

SPECIMEN DESCRIPTION: (Also see "Test Results")

Each of the Acoustic Baffles were labeled for testing. Each of the 6 Baffles tested, measured 2” thick by 24” x 48” and weighed 5.5 lbs. each. Each of the baffles were spaced 24” on-center. The distance from the bottom of the baffles to the test floor measured 22”.

Test Specimen:	
Dimension:	6 Pieces each 48 in. x 24 in.
Total Weight:	33 lbs.
Overall Surface Area:	108 ft² (10.02 M²)

Environmental Conditions:	
Temperature (°C):	21.3
Humidity (%):	45
ATM (hPa)	980

Individual Baffle:	
Dimension:	48 in. x 24 in.
Average Weight:	5.5 lbs.
Surface Area:	18 ft² (1.67 M²)
Material Thickness:	2 in.

Reverberant Room Volume
5825 ft³ (83m³)

Ear Controlled Data

TEST PROCEDURE AND EQUIPMENT:

Sound Absorption Test

ASTM C 423-17, “Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method”, was followed in every respect. The panels were tested in a Type J Mounting in accordance to ASTM E795-16.

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.

The Noise Reduction Coefficient (NRC) is a scalar representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.

The Sound Absorption Average (SAA) is the average of the absorption coefficients for the twelve one-third octave bands from 200 to 2500 Hz.

The higher the SAA or NRC value, the better the material absorbs sound.

TEST EQUIPMENT:

Item Description	ID #	Manufacturer/Model	Serial #	Calibration Due
1/2" Pressure Condenser Microphone	PT-162-075	GRAS/40AD	19220-1244	7/17/2021
Microphone Calibrator	MM-440-003	Bruel & Kjaer/4230	282266	7/17/2021
Data Acquisition Module	PT-162-107	National Instruments/NI9234	1735986-1893EB3	6/8/2021
Temp and Humidity Transmitter	PT-162-077	Dwyer Instruments/Series RH	M90714-E4SV-Y	6/4/2021

TEST DATA:

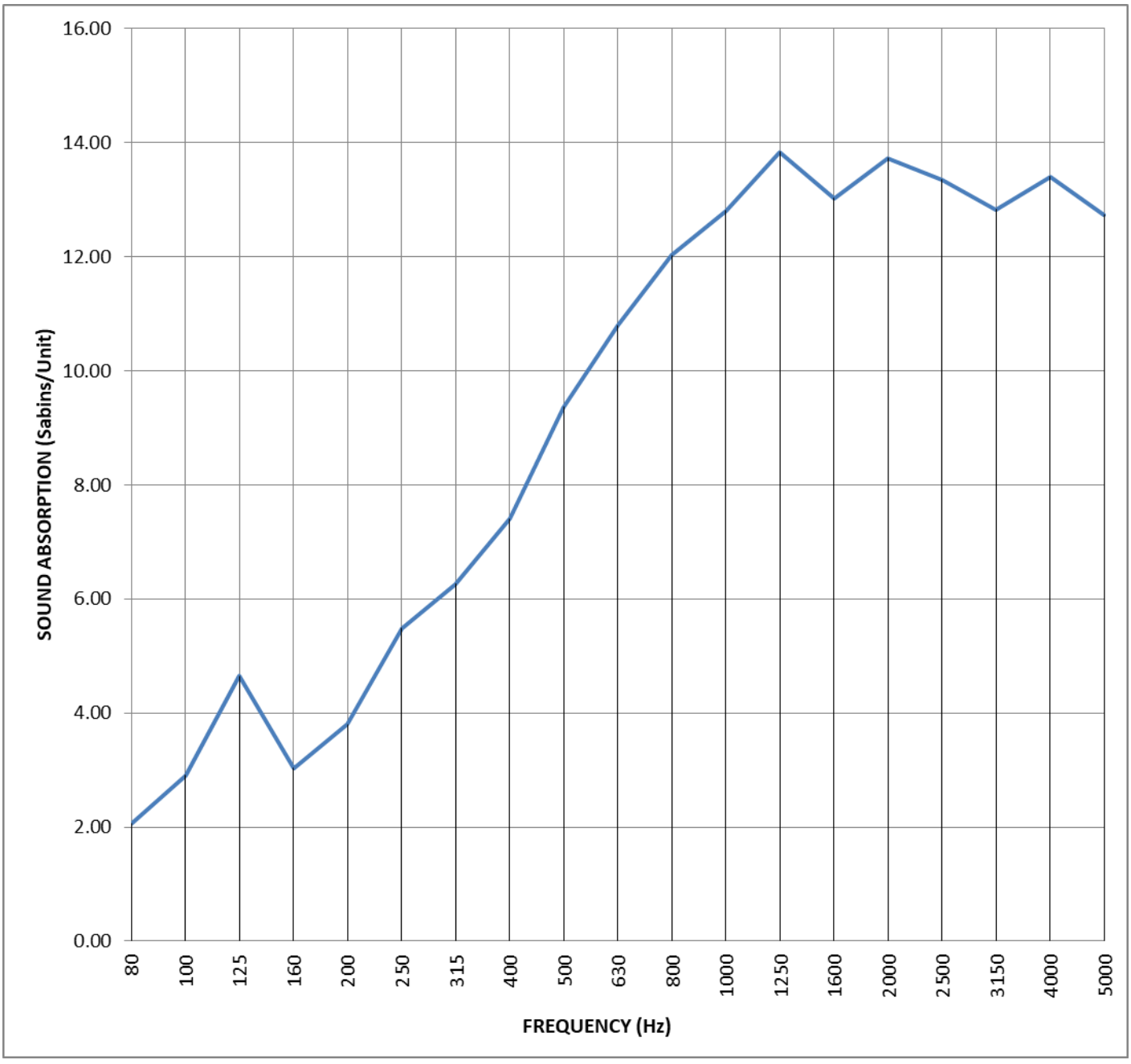
Note: There is currently no standardized method for calculating the Absorption Coefficients of sound absorptive objects that are separated or spaced. The performance of sound absorptive objects separated or spaced should not be directly compared to specimen tested as a single unit in a rectangular area (e.g. mounting types A or E as defined by ASTM E795-16)

Sabins/Unit Data

Frequency (Hz)	Total Absorption (M^2)	Total Absorption (Sabins)	Absorption (Sabins/Unit)
100	1.62	17.44	2.91
125	2.59	27.88	4.65
160	1.69	18.19	3.03
200	2.12	22.82	3.80
250	3.06	32.94	5.49
315	3.49	37.57	6.26
400	4.13	44.46	7.41
500	5.22	56.19	9.36
630	6.02	64.80	10.80
800	6.7	72.12	12.02
1000	7.14	76.86	12.81
1250	7.71	82.99	13.83
1600	7.26	78.15	13.02
2000	7.65	82.35	13.72
2500	7.44	80.09	13.35
3150	7.15	76.96	12.83
4000	7.47	80.41	13.40
5000	7.1	76.43	12.74

Ear Controlled Data

2” Polyester Acoustic Baffle



SOUND ABSORPTION
ASTM C423

General Information

Project No:	ESP035429P-28
Customer:	ASI
Test Date:	04-19-2021
Specimen ID:	2 Inch Polyester Acoustic Baffle
Specimen Description:	J Mount Large 2" - 24" - 48"
Specimen Dimensions - Area:	123.00" W x 127.00" H - 108.48 ft²
Operator:	MJC

Data Table

	absorption empty (m²)	absorption * sample (m²)	Absorption Coefficient
80	4.46	1.15	0.11
100	5.85	1.62	0.16
125	3.41	2.59	0.26
160	3.35	1.69	0.17
200	4.07	2.12	0.21
250	4.06	3.06	0.30
315	3.89	3.49	0.35
400	3.98	4.13	0.41
500	4.43	5.22	0.52
630	4.68	6.02	0.60
800	5.00	6.70	0.66
1000	5.33	7.14	0.71
1250	5.71	7.71	0.76
1600	6.57	7.26	0.72
2000	7.36	7.65	0.76
2500	8.39	7.44	0.74
3150	9.58	7.15	0.71
4000	11.54	7.47	0.74
5000	14.21	7.10	0.70

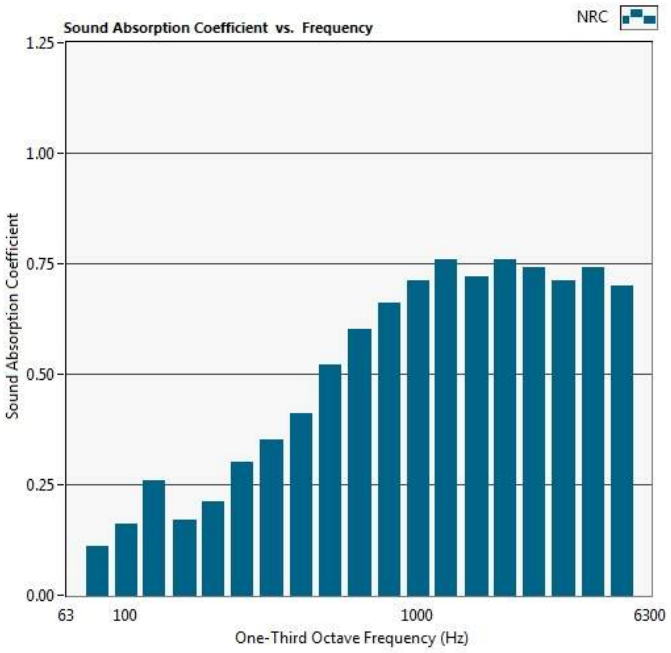
* based on an extended plane area of 108.48 ft²

Room Conditions

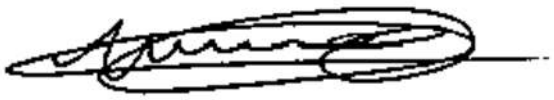
Temperature 21.3 °C

R.H. 45 %

ATM 980 hPa



NRC	SAA
0.55	0.56



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Ear Controlled Data