1512 S BATAVIA AVENUE
GENEVA, IL 60134
630-232-0104

An ALION Technical Center

Test Report

RIVERBANK.ALIONSCIENCE.COM
FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **Focal Point Lights**
Chicago, IL

Sound Absorption
RAL™-A20-010

CONDUCTED: 2020-01-07

ON: 12 in. TruBlade (8 units spaced 16 in. on center)

TEST METHODOLOGY

Riverbank Acoustical Laboratories™ is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) as an ISO 17025:2017 Laboratory (NVLAP Lab Code: 100227-0) and for this test procedure. The test reported in this document conformed explicitly with ASTM C423-17: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-16: "Standard Practices for Mounting Test Specimens During Sound Absorption Tests." A description of the measurement procedure and room specifications are available upon request. The results presented in this report apply to the sample as received from the test sponsor.

INFORMATION PROVIDED BY SPONSOR

The test specimen was designated by the sponsor as 12 in. TruBlade (8 units spaced 16 in. on center) . The following nominal product information was provided by the sponsor prior to testing. The accuracy of such sponsor-provided information can affect the validity of the test results.

Product Under Test

Trade Name:	12 in. TruBlade
Manufacturer:	Focal Point Lights

SPECIMEN MEASUREMENTS & TEST CONDITIONS

Through a full external visual inspection performed on the test specimen, Riverbank personnel verified the following information:

Test Specimen

Materials:	Semirigid felt panels
	Extruded aluminum rail along one long edge
Dimensions:	8 @ 2413 mm (95 in.) x 285.75 mm (11.25 in.)
Thickness:	9 mm (0.354 in.), excluding rail
	12.5 mm (0.492 in.), including rail
Overall Weight:	13.61 kg (30 lbs)

Physical Measurements (per unit)

Dimensions:	0.29 m (11.25 in) wide by 2.41 m (95.0 in) long
Thickness:	0.01 m (0.354 in)
Weight:	1.7 kg (3.75 lbs)

Test Environment

Room Volume:	291.98 m^3
Temperature:	21.3 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	63.2 % ± 1.0 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	98.8 kPa (Requirement not defined)

Each sound absorbing unit had an absorptive area (all exposed surfaces) of 1.43 m^2 (15.37 ft^2). The total absorptive area (all exposed surfaces) of all sound-absorbing units was 11.42 m^2 (122.93 ft^2). The array of units covered 6.91 m^2 (74.38 ft^2) of the horizontal test surface (total treated area).

MOUNTING METHOD

Type J Mounting: The specimen is an array of 8 spaced sound absorbing baffles suspended from cables such that the closest face of the baffles is located approximately 1200.15 mm (47.25 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The baffles were evenly distributed in a single row, spaced 406.4 mm (16 in.) on center.

Figure 1 – Specimen mounted in test chamber

Figure 2 – Detail of individual baffle materials

Focal Point Lights
2020-01-07

RAL™-A20-010

TEST RESULTS

Note: There is currently no standardized method for calculating Absorption Coefficients from spaced object absorbers. The sound absorption performance of spaced object absorbers should not be compared directly with specimens tested as a single rectangular area (e.g. mounting types A, E, etc.).

1/3 Octave Center Frequency	Total Absorption		Absorption per Unit	
(Hz)	(m^2)	(Sabins)	(m^2 / Unit)	(Sabins / Unit)
100	0.48	5.22	0.06	0.65
** 125	0.89	9.63	0.11	1.20
160	1.10	11.84	0.14	1.48
200	1.54	16.57	0.19	2.07
** 250	1.99	21.45	0.25	2.68
315	2.85	30.70	0.36	3.84
400	2.99	32.21	0.37	4.03
** 500	3.17	34.15	0.40	4.27
630	3.47	37.38	0.43	4.67
800	4.10	44.16	0.51	5.52
** 1000	4.46	47.99	0.56	6.00
1250	4.91	52.88	0.61	6.61
1600	5.46	58.80	0.68	7.35
** 2000	6.12	65.83	0.76	8.23
2500	6.69	72.03	0.84	9.00
3150	7.05	75.86	0.88	9.48
** 4000	7.05	75.86	0.88	9.48
5000	6.79	73.08	0.85	9.13

Tested by: Marc Sciaky
Senior Experimentalist

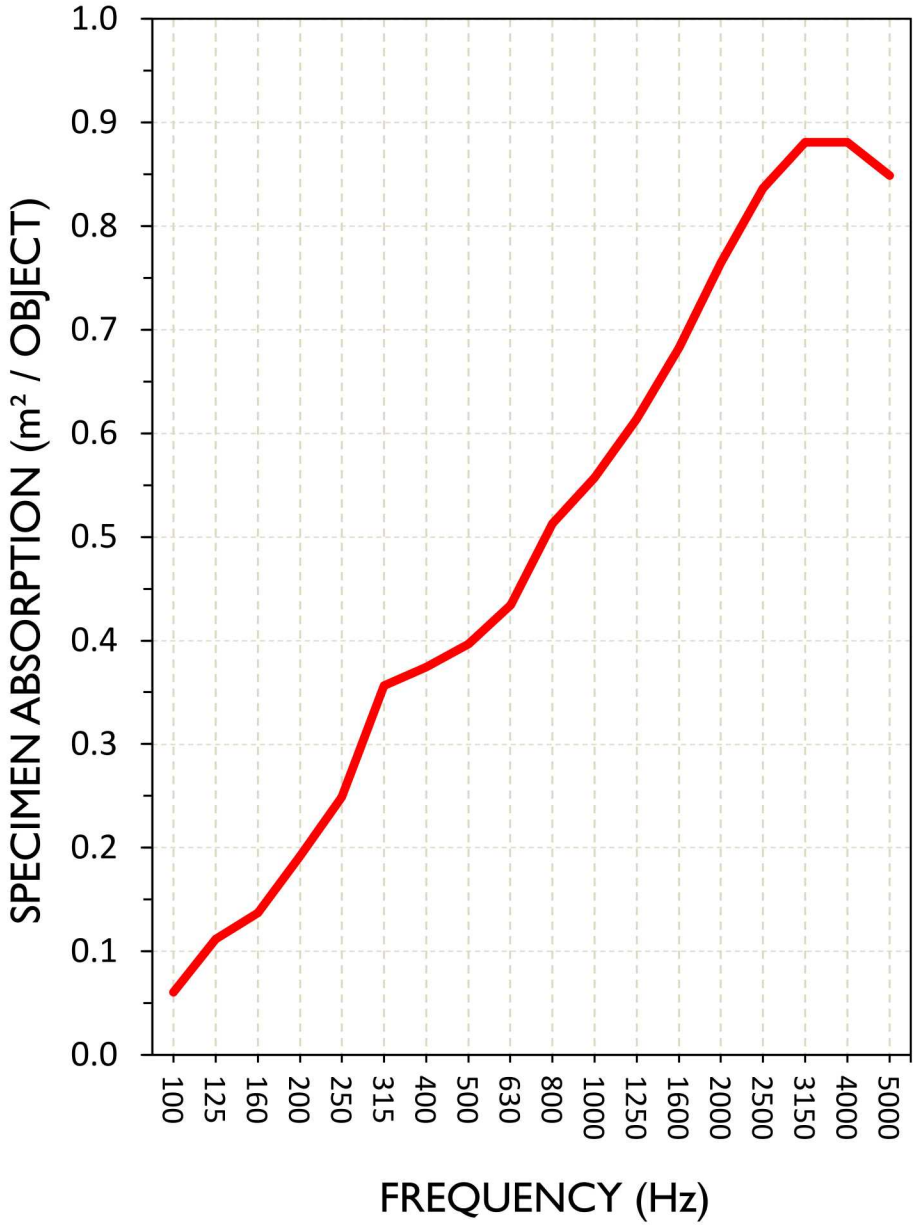
Report by: Malcolm Kelly
Test Engineer, Acoustician

Approved by: Eric P. Wolfram
Laboratory Manager

Digitally signed by Eric P Wolfram
Location: Geneva, IL
Date: 2020.01.23 13:55:23 -06'00'

SOUND ABSORPTION REPORT

12 in. TruBlade (8 units spaced 16 in. on center)



APPENDIX A: Extended Frequency Range Data

Specimen: 12 in. TruBlade (8 units spaced 16 in. on center) (See Full Report)

The following non-accredited data were obtained in accordance with ASTM C423-17, but extend beyond the defined frequency range of 100Hz to 5,000Hz. These unofficial results are representative of the RAL test environment only and intended for research & comparison purposes.

1/3 Octave Band Center Frequency (Hz)	Total Absorption (m^2)	Total Absorption (Sabins)	Absorption per Unit (m^2 / Unit)	Absorption per Unit (Sabins / Unit)
31.5	1.41	15.14	0.18	1.89
40	-0.35	-3.79	-0.04	-0.47
50	0.15	1.63	0.02	0.20
63	-0.28	-2.99	-0.03	-0.37
80	0.68	7.34	0.09	0.92
100	0.48	5.22	0.06	0.65
125	0.89	9.63	0.11	1.20
160	1.10	11.84	0.14	1.48
200	1.54	16.57	0.19	2.07
250	1.99	21.45	0.25	2.68
315	2.85	30.70	0.36	3.84
400	2.99	32.21	0.37	4.03
500	3.17	34.15	0.40	4.27
630	3.47	37.38	0.43	4.67
800	4.10	44.16	0.51	5.52
1000	4.46	47.99	0.56	6.00
1250	4.91	52.88	0.61	6.61
1600	5.46	58.80	0.68	7.35
2000	6.12	65.83	0.76	8.23
2500	6.69	72.03	0.84	9.00
3150	7.05	75.86	0.88	9.48
4000	7.05	75.86	0.88	9.48
5000	6.79	73.08	0.85	9.13
6300	6.27	67.52	0.78	8.44
8000	5.39	58.07	0.67	7.26
10000	4.41	47.52	0.55	5.94
12500	2.72	29.26	0.34	3.66

APPENDIX B: Instruments of Traceability

Specimen: 12 in. TruBlade (8 units spaced 16 in. on center) (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 1	Type 3160-A-042	3160-106968	2019-06-25	2020-06-25
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2019-09-27	2020-09-27
Bruel & Kjaer Pistonphone	Type 4228	2781248	2019-08-09	2020-08-09
EXTECH Hygro 662	SD700	A083662	2019-12-04	2020-12-04

APPENDIX C: Revisions to Original Test Report

Specimen: 12 in. TruBlade (8 units spaced 16 in. on center) (See Full Report)

Date	Revision
2020-01-10	Original report issued

END

Riverbank Acoustical Laboratories
1512 S. Batavia Ave.
Geneva, IL 60134-3302

Tel: 630-232-0104
Fax: 630-232-0138
Email: RAL@alionscience.com

SPONSOR: **Focal Point Lights**
Chicago, IL

Report Referenced: **RAL™-A20-010**

CONDUCTED: 2020-01-07

ON: 12 in. TruBlade (8 units spaced 16 in. on center) (See Full Test Report for Details)

Appendix D to ASTM C423 Sound Absorption Test
Non-standard calculation of equivalent NRC Rating and Absorption Coefficients from spaced absorbers

At this time ASTM C423 does not provide a standard method for determining absorption coefficients of spaced object absorbers. Tests of a set of sound absorbing objects spaced apart from each other will yield higher absorption rates than a specimen joined together as a single patch (A-Mount or E-Mount). For this reason it is unfair to provide NRC or absorption coefficient ratings for specimens that consist of a spaced set of absorbers. Despite this, the architectural industry has expressed great demand for a simple "single number" rating for these treatments. Likewise, acoustical consultants desire equivalent absorption coefficient data for use in acoustical modeling software. The following is an attempt to appease these demands until ASTM develops a standard method for calculation. Several alternate non-standard calculation methods are provided. Riverbank Acoustical Laboratories prefers method 1.

Method 1) Apparent Sound Absorption Coefficient calculated from total test surface area covered
The total sound absorption yielded by the specimen is divided by the total surface area of the test surface covered by the suspended baffles, including intermediate spaces. The baffle rigging covered 6.91 m^2 (74.38 ft^2) of horizontal test surface area. With an extra 397.41 mm (15.646 in.) of width to account for the space between the tested array and what would be the next baffle in a larger array, the surface area comes to 7.87 m^2 (84.71 ft^2) Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. This may be the most accurate method for comparing baffle arrays to ceiling tile products. The apparent sound absorption coefficient data can be assigned to a single horizontal surface or plane in acoustical modeling software for approximation of baffle array performance. Such approximations rely on the assumptions that baffle spacing is similar to that of the tested array and that the installation occurs over a perfectly reflective ceiling surface.

Method 2) Apparent Sound Absorption Coefficient calculated from total exposed surface area of specimen
The total sound absorption yielded by the specimen is divided by the total surface area of all exposed specimen faces (1.43 m^2 (15.37 ft^2) per baffle x 8 baffles = 11.42 m^2 (122.93 ft^2) total surface area). Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. This method shows the actual absorption occurring at the exposed surfaces, but does not provide a fair comparison with materials mounted as a uniform patch (in A-mount or E-mount).

Method 3) Apparent Sound Absorption Coefficient calculated from one face per baffle
The total sound absorption yielded by the specimen is divided by the surface area of one side of one large face for each baffle in the specimen (0.69 m^2 (7.42 ft^2) per baffle x 8 baffles = 5.52 m^2 (59.38 ft^2) total surface area). Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. This method is favored by some material manufacturers since it yields very high NRC figures, but does not provide a fair comparison with other ceiling tile or wall panel products. Riverbank Acoustical Laboratories recommends that results obtained from this method be used for research and comparison purposes only; such results should not be used for marketed claims of product performance.

Riverbank Acoustical LABORATORIES™
An ALION Technical Center

Riverbank Acoustical Laboratories
1512 S. Batavia Ave.
Geneva, IL 60134-3302

Tel: 630-232-0104
Fax: 630-232-0138
Email: RAL@alionscience.com

SPONSOR: **Focal Point Lights**
CONDUCTED: 2020-01-07

Report Referenced: **RAL™-A20-010**

Appendix D: Data Note: See full test report for details of mounting position, spacing, and configuration, as these parameters greatly affect sound absorption performance.

Specimen Absorption			Method 1	Method 2	Method 3
Freq. (Hz)	Sabins	Sabins / Unit	Apparent Abs. Coefficient From Total Coverage Area	Apparent Abs. Coefficient From Total Exposed Surface Area	Apparent Abs. Coefficient From One Face/Baffle
31.5	15.14	1.89	0.18	0.12	0.26
40	-3.79	-0.47	-0.04	-0.03	-0.06
50	1.63	0.20	0.02	0.01	0.03
63	-2.99	-0.37	-0.04	-0.02	-0.05
80	7.34	0.92	0.09	0.06	0.12
100	5.22	0.65	0.06	0.04	0.09
125	9.63	1.20	0.11	0.08	0.16
160	11.84	1.48	0.14	0.10	0.20
200	16.57	2.07	0.20	0.13	0.28
250	21.45	2.68	0.25	0.17	0.36
315	30.70	3.84	0.36	0.25	0.52
400	32.21	4.03	0.38	0.26	0.54
500	34.15	4.27	0.40	0.28	0.58
630	37.38	4.67	0.44	0.30	0.63
800	44.16	5.52	0.52	0.36	0.74
1,000	47.99	6.00	0.57	0.39	0.81
1,250	52.88	6.61	0.62	0.43	0.89
1,600	58.80	7.35	0.69	0.48	0.99
2,000	65.83	8.23	0.78	0.54	1.11
2,500	72.03	9.00	0.85	0.59	1.21
3,150	75.86	9.48	0.90	0.62	1.28
4,000	75.86	9.48	0.90	0.62	1.28
5,000	73.08	9.13	0.86	0.59	1.23
6,300	67.52	8.44	0.80	0.55	1.14
8,000	58.07	7.26	0.69	0.47	0.98
10,000	47.52	5.94	0.56	0.39	0.80
12,500	29.26	3.66	0.35	0.24	0.49
		Apparent NRC:	**0.50**	**0.35**	**0.70**
		Apparent SAA:	**0.51**	**0.35**	**0.72**

Prepared by
Malcolm Kelly
Test Engineer, Acoustician