

1512 S BATAVIA AVENUE
GENEVA, IL 60134

An  ALION Technical Center

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630-232-0104

Test Report

FOUNDED 1918 BY
WALLACE CLEMENT SABINE

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

Sound Absorption
RAL™-A19-534

CONDUCTED: 2019-12-16

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ON: Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation)

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 Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation). 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: Acoustic Tile, 2 ft x 2 ft, 4 in.
Materials: Formed polyethylene terephthalate felt panels
Nominal thickness @ 9 mm (0.354 in.)
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

Material: Semirigid felt base panels with variable-depth protrusions
Dimensions: 16 @ 603.25 mm (23.75 in.) x 603.25 mm (23.75 in.)
Thickness: Base panels @ 9.33 - 9.95 mm (0.367 - 0.392 in.)
Maximum protrusion @ 106 mm (4.173 in.) from base
Minimum protrusion @ 26 mm (1.024 in.) from base
Maximum overall @ 113.46 mm (4.467 in.)
Overall Weight: 25.17 kg (55.5 lbs)
Installation: Orientation varied such that each row and column had tiles of four different orientations



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Page 2 of 8**Overall Specimen Properties**

Size: 2.41 m (95.0 in) wide by 2.41 m (95.0 in) long
Thickness: 0.11 m (4.467 in)
Weight: 25.17 kg (55.5 lbs)
Mass per Unit Area: 4.32 kg/m² (0.89 lbs/ft²)
Calculation Area: 5.823 m² (62.67 ft²)

Test Environment

Room Volume: 291.98 m³
Temperature: 21.2 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 65.9 % ± 1.0 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 99.2 kPa (Requirement not defined)

MOUNTING METHOD

Type E-400 Mounting: The test specimen was mounted on the top face of a metal fixture with enclosed perimeter edges, with an airspace behind the specimen. The specimen was supported by an array of adjustable metal slats spanning the fixture, spaced approximately 609.6 mm (24 in.) on center. The numeral suffix in the designation is the defined by the standard as the distance in millimeters from the exposed face of the test specimen to the horizontal test surface, rounded to the nearest integer multiple of 5. For the purposes of this test report, the mounting designation uses the face of the base panels as the reference. Perimeter edges of the specimen were sealed with metal framing.

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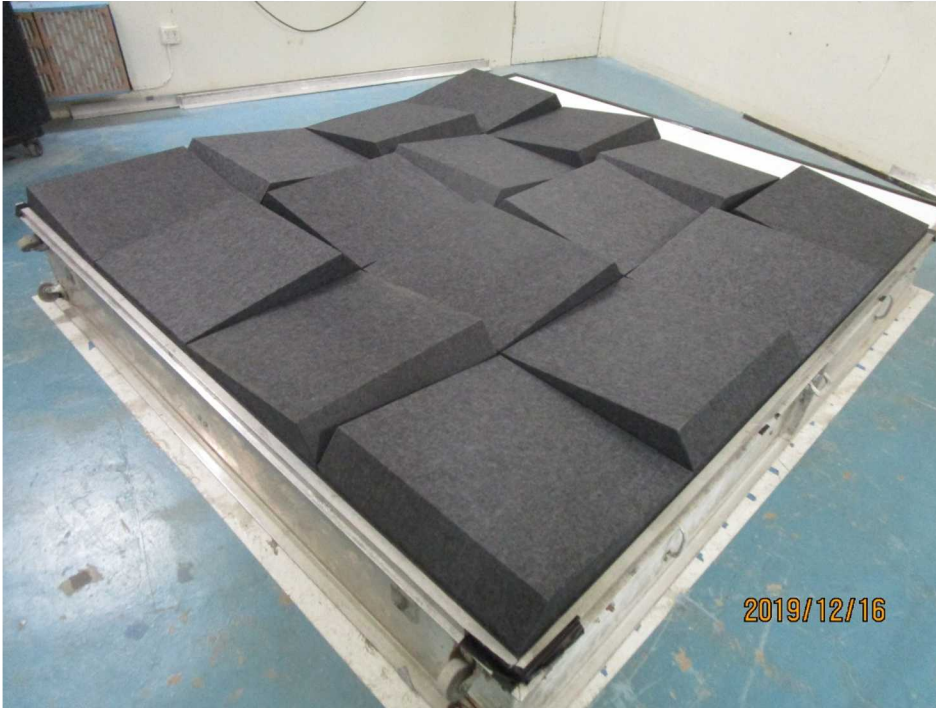


Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of individual tile, protrusion depth profile

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TEST RESULTS

Specimen total absorption and absorption coefficient are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages.

1/3 Octave Center

Frequency (Hz)	Total Absorption (m ²)	Total Absorption (Sabins)	Absorption Coefficient
100	5.89	63.38	1.01
** 125	6.41	68.99	1.10
160	6.01	64.64	1.03
200	5.86	63.09	1.01
** 250	5.82	62.66	1.00
315	5.76	62.04	0.99
400	5.82	62.60	1.00
** 500	6.31	67.87	1.08
630	6.57	70.67	1.13
800	6.85	73.74	1.18
** 1000	6.94	74.70	1.19
1250	7.20	77.48	1.24
1600	7.27	78.27	1.25
** 2000	7.09	76.28	1.22
2500	6.99	75.24	1.20
3150	7.11	76.57	1.22
** 4000	7.33	78.94	1.26
5000	7.30	78.56	1.25

SAA = 1.12

NRC = 1.10



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TEST RESULTS (continued)

The sound absorption average (SAA) is defined in ASTM C423-17 Section 3.1.1 as the arithmetic average of the sound absorption coefficients of a material for the twelve one-third octave bands from 200 Hz through 2500 Hz, inclusive, rounded to the nearest integer multiple of 0.01.

The noise reduction coefficient (NRC) is defined from previous versions of ASTM C423 as the arithmetic average of the sound absorption coefficients at 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz, rounded to the nearest integer multiple of 0.05.

Tested by Marc Sciaky
Marc Sciaky
Senior Experimentalist

Report by Malcolm Kelly
Malcolm Kelly
Acoustical Test Engineer

Approved by Eric P. Wolfram
Eric P. Wolfram
Laboratory Manager

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Location: Geneva, IL
Date: 2020.01.07 14:58:59 -06'00'



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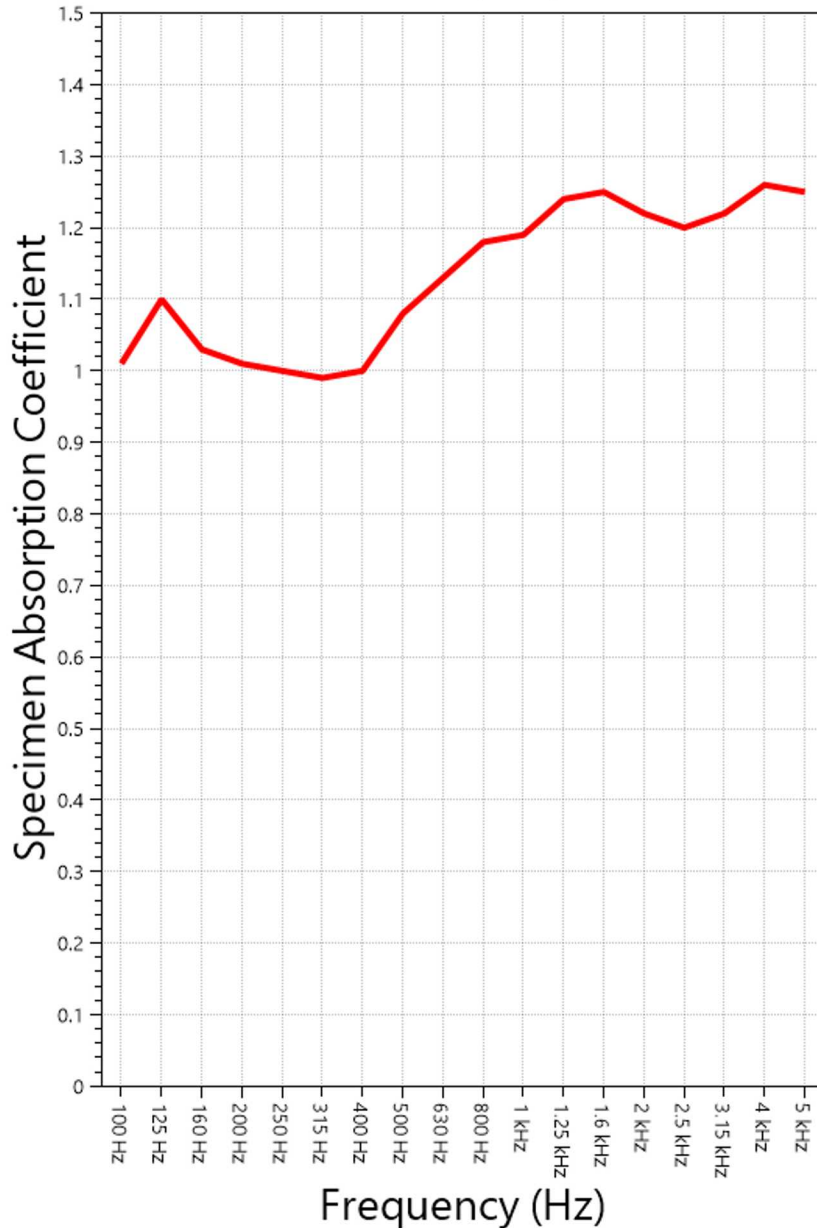
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SOUND ABSORPTION REPORT

Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation)



SAA = 1.12
NRC = 1.10



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APPENDIX A: Extended Frequency Range Data

Specimen: Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation) (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 (Sabins)	Absorption Coefficient
31.5	28.62	0.46
40	19.20	0.31
50	94.84	1.51
63	35.72	0.57
80	52.43	0.84
100	63.38	1.01
125	68.99	1.10
160	64.64	1.03
200	63.09	1.01
250	62.66	1.00
315	62.04	0.99
400	62.60	1.00
500	67.87	1.08
630	70.67	1.13
800	73.74	1.18
1000	74.70	1.19
1250	77.48	1.24
1600	78.27	1.25
2000	76.28	1.22
2500	75.24	1.20
3150	76.57	1.22
4000	78.94	1.26
5000	78.56	1.25
6300	79.55	1.27
8000	84.54	1.35
10000	91.13	1.45
12500	99.33	1.58



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APPENDIX B: Instruments of Traceability

Specimen: Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation) (See Full Report)

<u>Description</u>	<u>Model</u>	<u>Serial Number</u>	<u>Date of Certification</u>	<u>Calibration Due</u>
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
Omega Digital Temp., Humid. And Pressure Recorder	OM-CP-PRHTemp2000	P97844	2019-02-08	2020-02-08

APPENDIX C: Revisions to Original Test Report

Specimen: Acoustic Tile, 2 ft x 2 ft, 4 in. Angled (varied orientation) (See Full Report)

<u>Date</u>	<u>Revision</u>
2020-01-02	Original report issued

END