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

An ALION Technical Center

Test Report

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WALLACE CLEMENT SABINE

FOR: **Turf Design**
Elgin, IL

Sound Absorption
RAL™-A18-382

CONDUCTED: 2018-11-20

ON: Crease tiles, configuration A over fissured ceiling tiles

TEST METHOD

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 17025:2005 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 is available upon request.

DESCRIPTION OF THE SPECIMEN

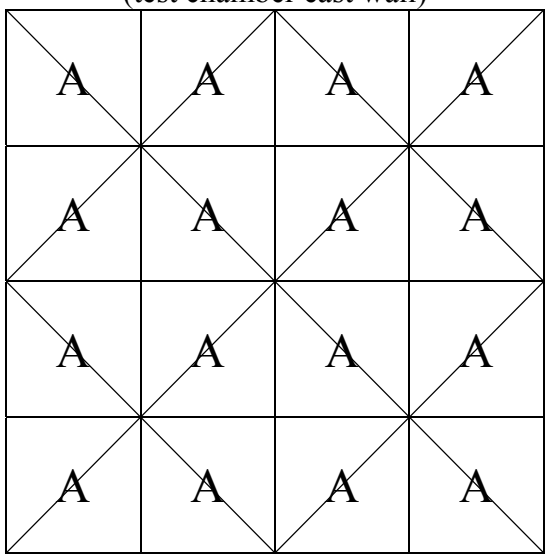
The test specimen was designated by the manufacturer as Crease tiles, configuration A over fissured ceiling tiles. A full external visual inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

Test Specimen (in order of installation)

Layer 1	
Materials:	Fissured ceiling tile, wet-formed mineral fiber substrate
Dimensions:	8 @ 1212.85 mm (47.75 in.) x 603.25 mm (23.75 in.)
Thickness:	15.88 mm (0.625 in.)
Overall Weight:	17.92 kg (39.5 lbs)
Layer 2	
Trade Name:	Crease, Type A
Materials:	Formed polyethylene terephthalate felt
Tile Dimensions:	16 @ 609.6 mm (24 in.) x 609.6 mm (24 in.)
Overall Thickness:	149.22 mm (5.875 in.)
Tile Wall Thickness:	5 mm (0.197 in.)
Overall Weight:	11.45 kg (25.25 lbs)
Installation:	Loose laid over Layer 1

Specimen Configuration

(test chamber east wall)



Note: In the Specimen Configuration diagram, diagonal lines across the tiles represent the orientation of the line of constant tile thickness.

Physical Measures

Size:	2.44 m (96.0 in) wide by 2.44 m (96.0 in) long
Thickness:	0.17 m (6.5 in)
Weight:	29.37 kg (64.75 lbs)
Mass per Unit Area:	4.94 kg/m² (1.01 lbs/ft²)
Calculation Area:	5.946 m² (64 ft²)

Test Environment

Room Volume:	291.98 m³
Temperature:	20.3 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	62.5 % ± 0.2 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	99.5 kPa (Requirement not defined)

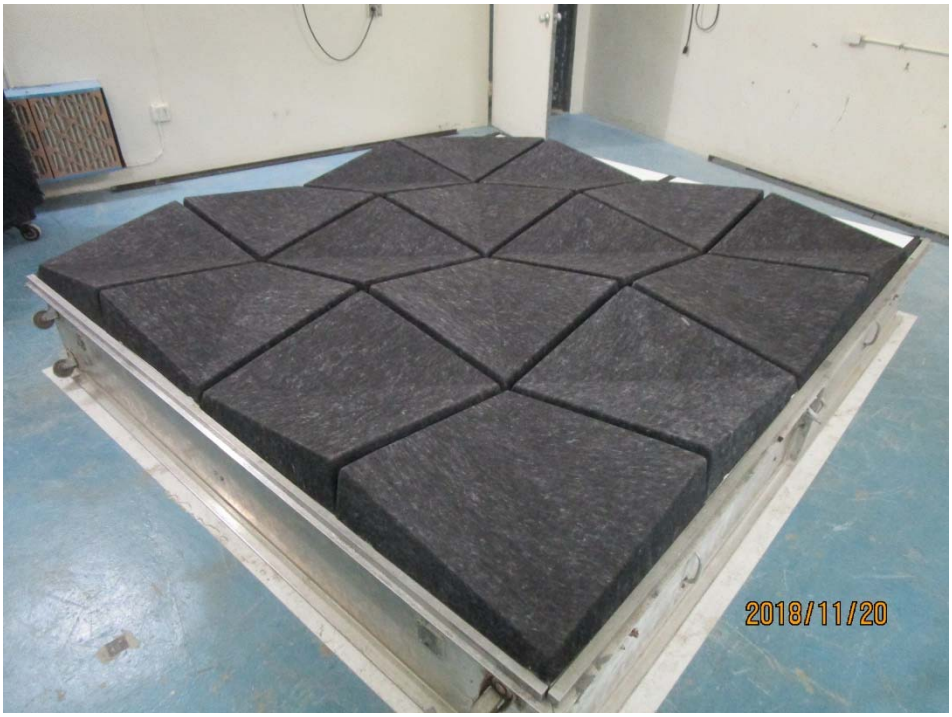


Figure 1 – Specimen mounted in test chamber, as viewed from southeast corner of test chamber

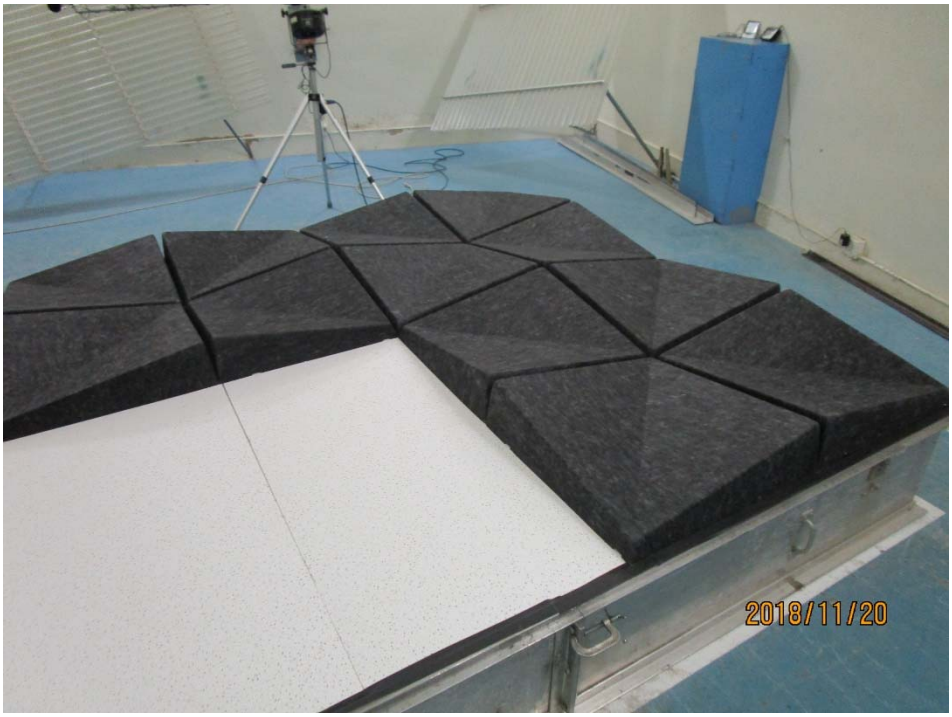


Figure 2 – Layer 2 partially installed over Layer 1

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MOUNTING METHOD

Type E-400 Mounting: The test specimen was mounted with an airspace behind it. The number designates the distance in mm from the exposed face of the test specimen to the test surface, rounded to the nearest integer multiple of 5. For the purposes of this report, the mounting designation uses the top face of Layer 1 for reference. Perimeter edges were sealed with metal framing.

TEST RESULTS

1/3 Octave Center Frequency (Hz)	Total Absorption (m^2)	Total Absorption (Sabins)	Absorption Coefficient
100	3.99	42.98	0.67
** 125	3.83	41.17	0.64
160	3.62	38.97	0.61
200	4.24	45.60	0.71
** 250	4.80	51.61	0.81
315	5.48	58.97	0.92
400	6.03	64.92	1.01
** 500	6.82	73.46	1.15
630	6.93	74.57	1.17
800	7.09	76.30	1.19
** 1000	7.05	75.86	1.19
1250	6.98	75.14	1.17
1600	6.68	71.90	1.12
** 2000	6.57	70.67	1.10
2500	6.55	70.47	1.10
3150	6.54	70.38	1.10
** 4000	6.57	70.72	1.10
5000	6.76	72.76	1.14

SAA = 1.05
NRC = 1.05

TEST RESULTS (Continued)

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

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

Tested by _____
Marc Sciaky
Experimentalist

Report by _____
Malcolm Kelly
Acoustician

Approved by _____
Eric P. Wolfram
Laboratory Manager

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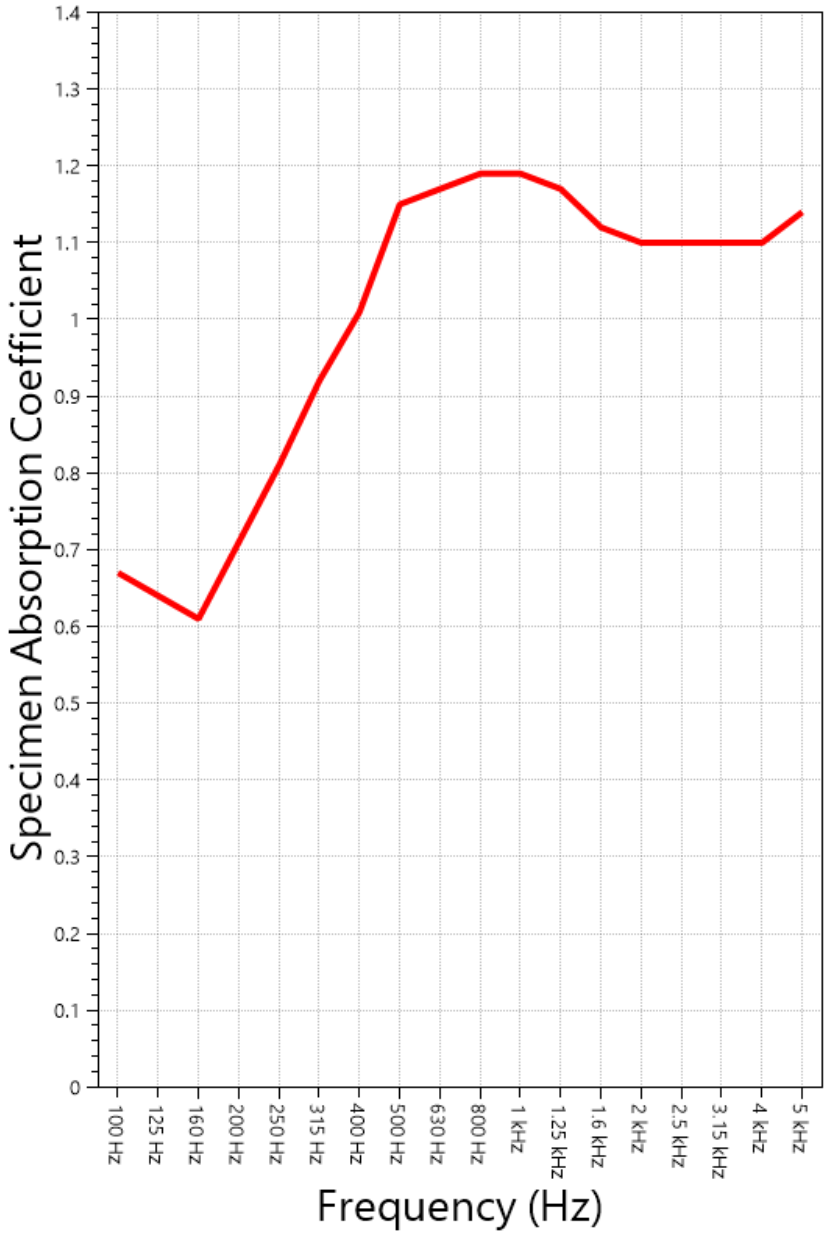
DN: cn=Eric P Wolfram, o=Alion Science & Technology, ou=Riverbank Acoustical Laboratories, email=ewolfram@alionscience.com, c=US
Date: 2018.12.13 14:01:43 -06'00'

SOUND ABSORPTION REPORT

Crease tiles, configuration A over fissured ceiling tiles



SAA = 1.05
NRC = 1.05

APPENDIX A: Extended Frequency Range Data

Specimen: Crease tiles, configuration A over fissured ceiling tiles (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	20.78	0.32
40	18.18	0.28
50	15.71	0.25
63	19.53	0.31
80	42.05	0.66
100	42.98	0.67
125	41.17	0.64
160	38.97	0.61
200	45.60	0.71
250	51.61	0.81
315	58.97	0.92
400	64.92	1.01
500	73.46	1.15
630	74.57	1.17
800	76.30	1.19
1000	75.86	1.19
1250	75.14	1.17
1600	71.90	1.12
2000	70.67	1.10
2500	70.47	1.10
3150	70.38	1.10
4000	70.72	1.10
5000	72.76	1.14
6300	74.10	1.16
8000	78.44	1.23
10000	77.26	1.21
12500	83.44	1.30

APPENDIX B: Instruments of Traceability

Specimen: Crease tiles, configuration A over fissured ceiling tiles (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 1	Type 3160-A-4/2	3160-106968	2018-08-09	2019-08-09
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2018-09-28	2019-09-28
Bruel & Kjaer Pistonphone	Type 4228	2781248	2018-08-06	2019-08-06
Omega Digital Temp., Humid. And Pressure Recorder	OM-CP-PRHTemp2000	P97844	2018-02-03	2019-02-03

END