

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

An  ALION Technical Center

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FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

FOR: **Turf Design**  
Elgin, IL

**Sound Absorption**  
**RAL™-A18-311**

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CONDUCTED: 2018-09-25

ON: Carved tile, 9 mm

### 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 measuring procedure and room qualifications is available upon request.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Carved tile, 9 mm. A full external visual inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

#### **Panel**

Trade Name:	Carved tile
Material ID:	181793
Materials:	Polyethylene terephthalate felt
Dimensions:	16 @ 596.9 mm (23.5 in.) x 596.9 mm (23.5 in.) 4 @ 596.9 mm (23.5 in.) x 298.45 mm (11.75 in.)
Overall Thickness:	Nominal @ 9 mm (0.354 in.) Measured @ 9.28 mm (0.366 in.)
Overall Weight:	11.91 kg (26.25 lbs)

#### **Physical Measures**

Size:	2.39 m (94.0 in) wide by 2.69 m (105.75 in) long
Thickness:	9.28 mm (0.366 in.)
Weight:	11.91 kg (26.25 lbs)
Mass per Unit Area:	1.86 kg/m² (0.38 lbs/ft²)
Calculation Area:	6.413 m² (69.03 ft²)

#### **Test Environment**

Room Volume:	291.98 m³
Temperature:	20.4 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	57.25 % ± 0.3 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	98.1 kPa (Requirement not defined)

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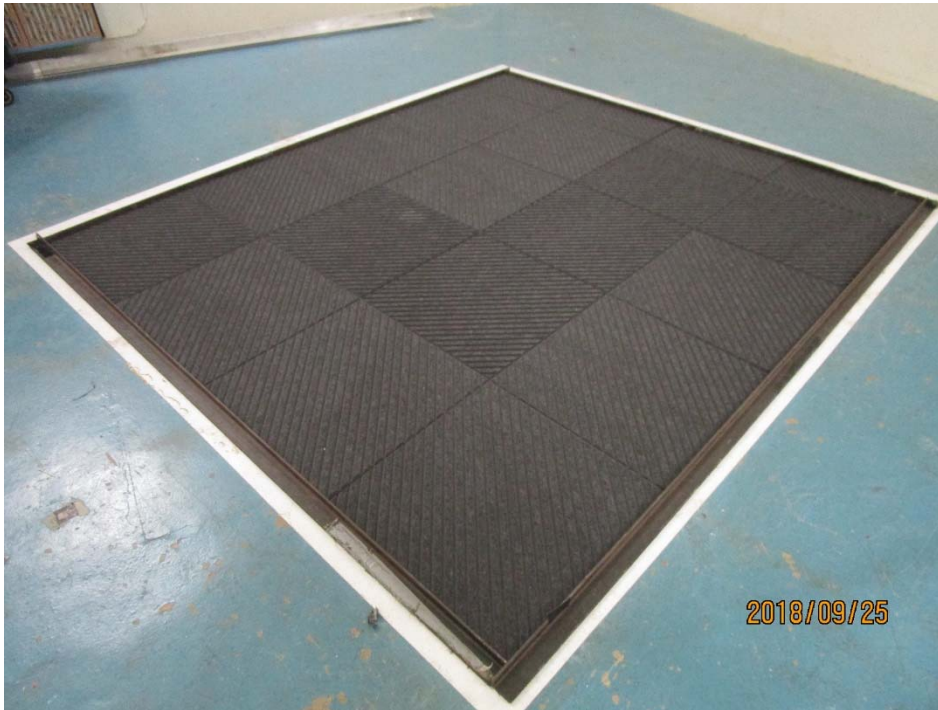


Figure 1 – Specimen mounted in test chamber

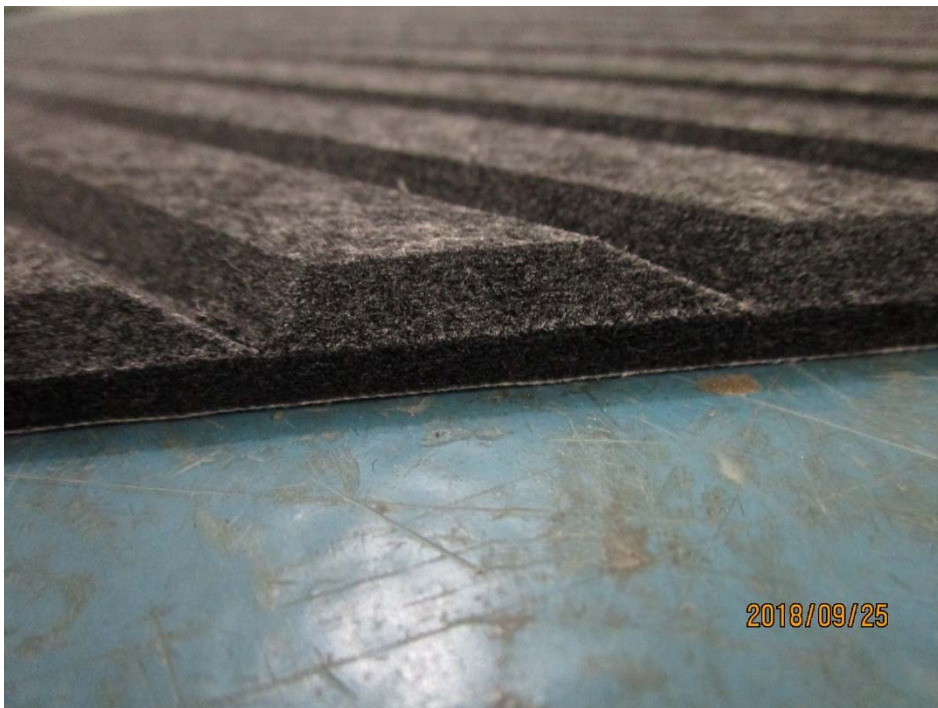


Figure 2 – Detail of specimen ridge pattern profile

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### MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Perimeter edges were sealed with metal framing.

### TEST RESULTS

1/3 Octave Center Frequency (Hz)	Total Absorption (m <sup>2</sup> )	Total Absorption (Sabins)	Absorption Coefficient
100	0.00	0.04	0.00
** 125	0.82	8.85	0.13
160	0.20	2.14	0.03
200	0.13	1.42	0.02
** 250	-0.06	-0.61	-0.01
315	0.24	2.57	0.04
400	0.32	3.49	0.05
** 500	0.57	6.11	0.09
630	0.87	9.33	0.14
800	1.40	15.12	0.22
** 1000	2.00	21.55	0.31
1250	2.57	27.64	0.40
1600	3.36	36.18	0.52
** 2000	3.87	41.68	0.60
2500	4.27	45.92	0.67
3150	4.74	51.05	0.74
** 4000	5.20	55.94	0.81
5000	5.78	62.20	0.90

**SAA = 0.25**

**NRC = 0.25**

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### 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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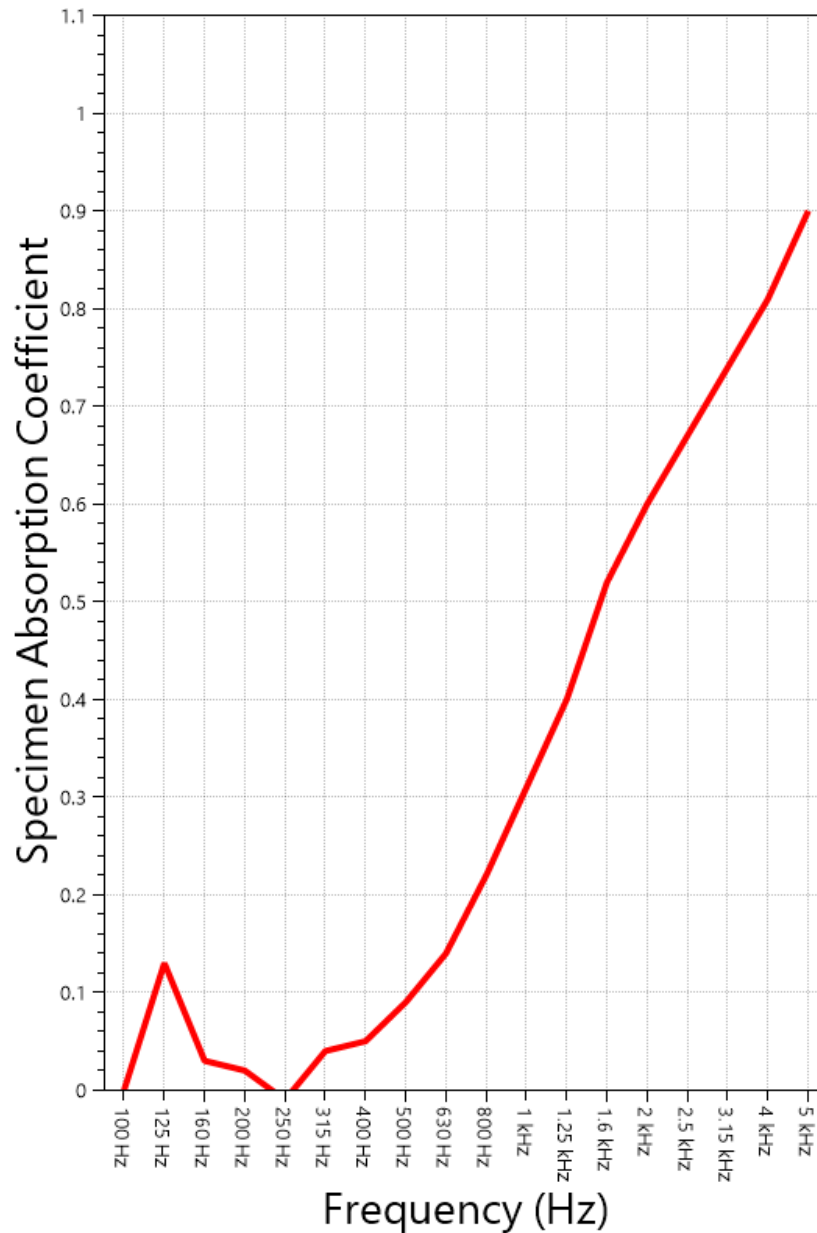
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### SOUND ABSORPTION REPORT

Carved tile, 9 mm



**SAA = 0.25**

**NRC = 0.25**



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### **APPENDIX A: Extended Frequency Range Data**

Specimen: Carved tile, 9 mm (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	7.22	0.10
40	6.92	0.10
50	4.35	0.06
63	-13.76	-0.20
80	-1.88	-0.03
100	0.04	0.00
125	8.85	0.13
160	2.14	0.03
200	1.42	0.02
250	-0.61	-0.01
315	2.57	0.04
400	3.49	0.05
500	6.11	0.09
630	9.33	0.14
800	15.12	0.22
1000	21.55	0.31
1250	27.64	0.40
1600	36.18	0.52
2000	41.68	0.60
2500	45.92	0.67
3150	51.05	0.74
4000	55.94	0.81
5000	62.20	0.90
6300	65.83	0.95
8000	73.14	1.06
10000	75.27	1.09
12500	74.84	1.08

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### **APPENDIX B: Instruments of Traceability**

Specimen: Carved tile, 9 mm (See Full Report)

<b><u>Description</u></b>	<b><u>Model</u></b>	<b><u>Serial Number</u></b>	<b><u>Date of Certification</u></b>	<b><u>Calibration Due</u></b>
System 1	Type 3160-A-4/2	3160- 106968	2018-08-09	2019-08-09
Bruel & Kjaer Mic And Preamp C	Type 4943-B-001	2311439	2018-03-27	2019-03-27
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

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