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

Test Report

An MALION Technical Center

RIVERBANK.ALIONSCIENCE.COM FOUNDED 1918 BY WALLACE CLEMENT SABINE

Sound Absorption RAL<sup>TM</sup>-A18-312

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FOR: **Turf Design** 

Elgin, IL

CONDUCTED: 2018-09-25 ON: Carved tile. 12 mm

#### **TEST METHOD**

Riverbank Acoustical Laboratories<sup>TM</sup> 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, 12 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 @ 298.45 mm (11.75 in.) x 596.9 mm (23.5 in.)

Overall Thickness: Nominal @ 12 mm (0.472 in.)

Measured @ 12.31 mm (0.485 in.)

Overall Weight: 14.17 kg (31.25 lbs)

#### **Physical Measures**

Size: 2.39 m (94.0 in) wide by 2.69 m (105.75 in) long

Thickness: 12.31 mm (0.485 in.)
Weight: 14.17 kg (31.25 lbs)

Mass per Unit Area: 2.21 kg/m² (0.45 lbs/ft²) Calculation Area: 6.413 m² (69.03 ft²)

#### **Test Environment**

Room Volume: 291.98 m<sup>3</sup>

Temperature:  $20.4 \,^{\circ}\text{C} \pm 0.0 \,^{\circ}\text{C}$  (Requirement:  $\geq 10 \,^{\circ}\text{C}$  and  $\leq 5 \,^{\circ}\text{C}$  change) Relative Humidity:  $56.75 \,^{\circ}\% \pm 0.5 \,^{\circ}\%$  (Requirement:  $\geq 40 \,^{\circ}\%$  and  $\leq 5 \,^{\circ}\%$  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



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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	<b>Total Absorption</b>	<b>Total Absorption</b>	Absorption
(Hz)	$(m^2)$	(Sabins)	Coefficient
100	0.28	3.06	0.04
<b>**</b> 125	0.23	2.45	0.04
160	-0.33	-3.50	-0.05
• • •	0.40		0.00
200	0.12	1.34	0.02
** 250	-0.03	-0.29	0.00
315	0.39	4.17	0.06
400	0.52	5.60	0.00
400	0.53	5.69	0.08
** 500	0.86	9.29	0.13
630	1.38	14.85	0.22
800	2.12	22.81	0.33
** 1000	2.96	31.88	0.46
1250	3.56	38.28	0.55
1600	4.44	47.80	0.69
** 2000	5.15	55.39	0.80
2500	5.84	62.83	0.91
2150	6.20	60.62	0.00
3150	6.38	68.63	0.99
** 4000	6.65	71.58	1.04
5000	6.53	70.25	1.02

SAA = 0.35NRC = 0.35



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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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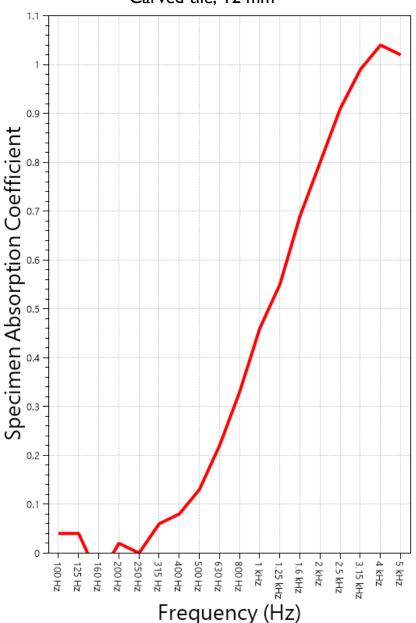
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#### SOUND ABSORPTION REPORT

Carved tile, 12 mm



**SAA = 0.35** 

NRC = 0.35



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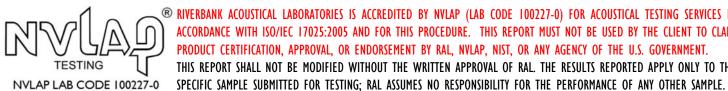
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## APPENDIX A: Extended Frequency Range Data

Specimen: Carved tile, 12 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	<b>Total Absorption</b>	Absorption
(Hz)	(Sabins)	Coefficient
31.5	3.84	0.06
40	5.13	0.07
50	-5.95	-0.09
63	-1.19	-0.02
80	-2.33	-0.03
100	3.06	0.04
125	2.45	0.04
160	-3.50	-0.05
200	1.34	0.02
250	-0.29	0.00
315	4.17	0.06
400	5.69	0.08
500	9.29	0.13
630	14.85	0.22
800	22.81	0.33
1000	31.88	0.46
1250	38.28	0.55
1600	47.80	0.69
2000	55.39	0.80
2500	62.83	0.91
3150	68.63	0.99
4000	71.58	1.04
5000	70.25	1.02
6300	72.80	1.05
8000	66.31	0.96
10000	64.22	0.93
12500	67.65	0.98



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

Specimen: Carved tile, 12 mm (See Full Report)

		Serial	Date of	Calibration
<b>Description</b>	<b>Model</b>	<u>Number</u>	<b>Certification</b>	<u>Due</u>
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

**END** 

