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Test Report

FOR: **Turf Design**

Elgin, IL

Sound Absorption RALTM-A18-457

CONDUCTED: 2018-12-18

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ON: 9 mm thick PET felt sheets

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 are available upon request.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as 9 mm thick PET felt sheets. A full external visual inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

Test Specimen

Material: Polyethylene terephthalate felt

Dimensions: 4 @ 600.07 mm (23.625 in.) x 604.77 mm (23.81 in.)

4 @ 2133.6 mm (84 in.) x 606.42 mm (23.875 in.)

Overall Thickness: 9.17 mm (0.361 in.) Overall Weight: 12.59 kg (27.75 lbs)

Physical Measures

Size: 2.73 m (107.625 in) wide by 2.43 m (95.5 in) long

Thickness: 9.17 mm (0.361 in.) Weight: 12.59 kg (27.75 lbs)

Mass per Unit Area: 1.9 kg/m² (0.39 lbs/ft²)

Calculation Area: 6.631 m² (71.38 ft²)

Test Environment

Room Volume: 291.98 m³

Temperature: $20.3 \, ^{\circ}\text{C} \pm 0.1 \, ^{\circ}\text{C}$ (Requirement: $\geq 10 \, ^{\circ}\text{C}$ and $\leq 5 \, ^{\circ}\text{C}$ change) Relative Humidity: $62.45 \, ^{\circ}\text{M} \pm 0.3 \, ^{\circ}\text{M}$ (Requirement: $\geq 40 \, ^{\circ}\text{M}$ and $\leq 5 \, ^{\circ}\text{M}$ change)

Barometric Pressure: 99.6 kPa (Requirement not defined)



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Figure 1 – Specimen mounted in test chamber

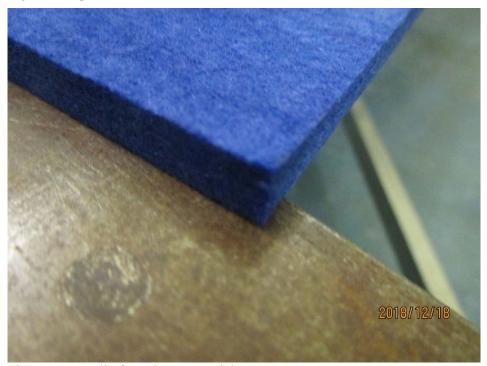


Figure 2 – Detail of specimen material



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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. Perimeter edges were sealed with metal framing.

TEST RESULTS

1/3 Octave Center			
Frequency	Total Absorption	Total Absorption	Absorption
(Hz)	(m^2)	(Sabins)	Coefficient
100	5.00	53.86	0.75
** 125	6.41	68.95	0.97
160	4.97	53.53	0.75
200	6.21	66.82	0.94
** 250	6.36	68.44	0.96
315	5.92	63.73	0.89
400	5.24	56.41	0.79
** 500	4.40	47.31	0.66
630	5.09	54.75	0.77
800	5.35	57.55	0.81
** 1000	5.38	57.88	0.81
1250	5.74	61.81	0.87
1600	6.09	65.51	0.92
** 2000	6.31	67.92	0.95
2500	6.47	69.64	0.98
3150	6.62	71.29	1.00
** 4000	6.75	72.62	1.02
5000	6.83	73.56	1.03

SAA = 0.86NRC = 0.85



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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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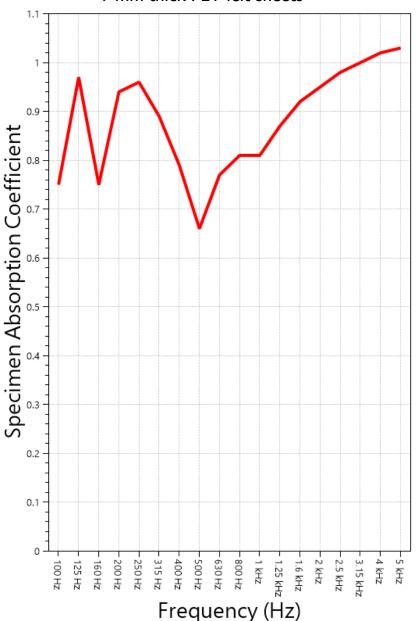
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SOUND ABSORPTION REPORT

9 mm thick PET felt sheets



SAA = 0.86

NRC = 0.85



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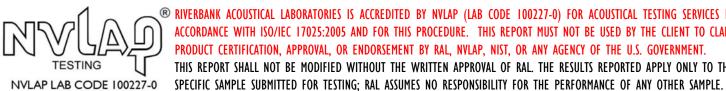
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APPENDIX A: Extended Frequency Range Data

Specimen: 9 mm thick PET felt sheets (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	Total Absorption	Absorption
(Hz)	(Sabins)	Coefficient
31.5	16.23	0.23
40	1.69	0.02
50	-0.99	-0.01
63	30.57	0.43
80	24.77	0.35
100	53.86	0.75
125	68.95	0.97
160	53.53	0.75
200	66.82	0.94
250	68.44	0.96
315	63.73	0.89
400	56.41	0.79
500	47.31	0.66
630	54.75	0.77
800	57.55	0.81
1000	57.88	0.81
1250	61.81	0.87
1600	65.51	0.92
2000	67.92	0.95
2500	69.64	0.98
3150	71.29	1.00
4000	72.62	1.02
5000	73.56	1.03
6300	76.32	1.07
8000	78.78	1.10
10000	81.57	1.14
12500	88.71	1.24



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APPENDIX B: Instruments of Traceability

Specimen: 9 mm thick PET felt sheets (See Full Report)

Description	Model	Serial <u>Number</u>	Date of Certification	Calibration <u>Due</u>
System 1	Type 3160-A-4/2	3 160- 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

