

Test Report

SPONSOR: **Catalyst Acoustics Group**
Agawam, MA

Sound Absorption
RAL™-A20-366

CONDUCTED: 2020-09-01

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ON: PET Geometric 3D Panels

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 PET Geometric 3D Panels. 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: Clif
Material: Polyethylene terephthalate felt
Manufacturer: Frasch

SPECIMEN MEASUREMENTS & TEST CONDITIONS

Through a full external visual inspection performed on the test specimen, Riverbank personnel verified the following information:

Test Specimen

Material: Assembled semirigid felt paneling, closed form geometry
Quantity: 72
Key Geometry: Square base, side length @ 304.8 mm (12 in.)
Maximum overall depth @ 123.82 mm (4.875 in.)
Geometry defined by vertices catalogued on following page
Overall Weight: 22.11 kg (48.75 lbs)
Installation: Square face mated to horizontal test surface
Each panel oriented perpendicular to all panels butted to its perimeter faces

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Each of the specimen panels can be described as a closed form consisting of seven (7) quadrilaterals and two (2) triangles. If a Cartesian coordinate system is established with the Z axis normal to the horizontal test surface and the origin at one corner of a panel, the geometry can be described as a composite of planar shapes bound by the catalogue of vertices given below:

Vertex Index	X coordinate	Y coordinate	Z coordinate
A	0	0	0
B	305 mm (12 in.)	0	0
C	0	305 mm (12 in.)	0
D	305 mm (12 in.)	305 mm (12 in.)	0
E	0	0	19.0 mm (0.75 in.)
F	305 mm (12 in.)	0	63.5 mm (2.5 in.)
G	0	305 mm (12 in.)	63.5 mm (2.5 in.)
H	305 mm (12 in.)	305 mm (12 in.)	19.0 mm (0.75 in.)
I	50.8 mm (2 in.)	178 mm (7 in.)	127 mm (5 in.)
J	254 mm (10 in.)	127 mm (5 in.)	127 mm (5 in.)

Overall Specimen Properties

Size: 2.74 m (108.0 in) wide by 2.44 m (96.0 in) long
 Thickness: 0.13 m (5.0 in.)
 Weight: 22.11 kg (48.75 lbs)
 Mass per Unit Area: 3.31 kg/m² (0.68 lbs/ft²)
 Calculation Area: 6.689 m² (72 ft²)

Test Environment

Room Volume: 291.98 m³
 Temperature: 22.9 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
 Relative Humidity: 57.5 % ± 0.6 % (Requirement: ≥ 40 % and ≤ 5 % change)
 Barometric Pressure: 98.5 kPa (Requirement not defined)

MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Per sponsor request, the perimeter edges were left exposed, as would be typical of a field installation of the product under test.



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Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of individual panel

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Figure 3 – Underside of individual panel



Figure 4 – Relative orientation of adjacent panels as installed

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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	2.46	26.43	0.37
** 125	2.62	28.18	0.39
160	2.69	28.94	0.40
200	3.31	35.58	0.49
** 250	3.96	42.62	0.59
315	4.95	53.25	0.74
400	5.46	58.74	0.82
** 500	6.48	69.72	0.97
630	6.35	68.34	0.95
800	6.75	72.65	1.01
** 1000	7.16	77.12	1.07
1250	7.21	77.59	1.08
1600	7.05	75.87	1.05
** 2000	7.15	76.97	1.07
2500	7.52	80.95	1.12
3150	7.54	81.11	1.13
** 4000	7.79	83.85	1.16
5000	7.94	85.43	1.19

SAA = 0.91

NRC = 0.95

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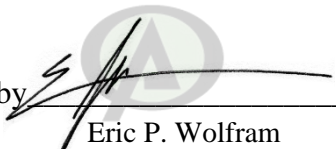
TEST RESULTS (continued)

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 
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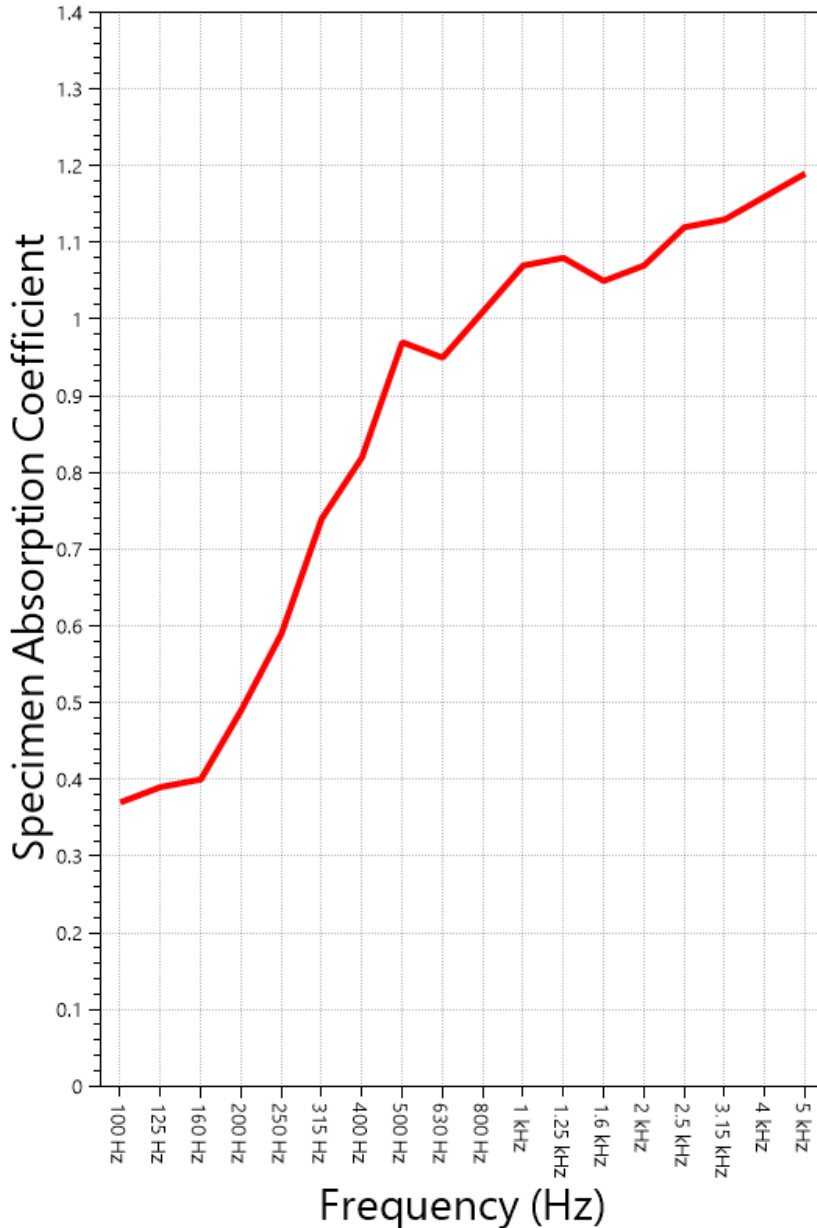
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SOUND ABSORPTION REPORT
PET Geometric 3D Panels



SAA = 0.91

NRC = 0.95

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APPENDIX A: Extended Frequency Range Data

Specimen: PET Geometric 3D Panels (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	10.84	0.15
40	1.29	0.02
50	1.11	0.02
63	8.11	0.11
80	23.57	0.33
100	26.43	0.37
125	28.18	0.39
160	28.94	0.40
200	35.58	0.49
250	42.62	0.59
315	53.25	0.74
400	58.74	0.82
500	69.72	0.97
630	68.34	0.95
800	72.65	1.01
1000	77.12	1.07
1250	77.59	1.08
1600	75.87	1.05
2000	76.97	1.07
2500	80.95	1.12
3150	81.11	1.13
4000	83.85	1.16
5000	85.43	1.19
6300	87.21	1.21
8000	91.38	1.27
10000	89.55	1.24
12500	94.23	1.31

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APPENDIX B: Instruments of Traceability

Specimen: PET Geometric 3D Panels (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	2020-06-26	2021-06-26
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2019-09-27	2020-09-27
Bruel & Kjaer Sound Level Calibrator	Type 4230	861609	2019-11-19	2020-11-19
Omega Digital Temp., Humid. And Pressure Recorder	OM-CP-PRHTemp2000	P97844	2020-02-18	2021-02-18

APPENDIX C: Revisions to Original Test Report

Specimen: PET Geometric 3D Panels (See Full Report)

<u>Date</u>	<u>Revision</u>
2020-09-04	Original report issued

END