

Test Report

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

Sound Absorption
RAL™-A20-367

CONDUCTED: 2020-09-01

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ON: PET Pyramid 3D Panel

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," with the single exception that the non-rectangular geometry of the specimen components precluded its installation in a rectangular patch, as specified in Section 9.1.1. 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 Pyramid 3D Panel. 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: Pyra 2.0
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
Quantity: 104
Geometry: Oblique tetrahedron
Equilateral triangular base, side length @ 406.4 mm (16 in.)
Apex located 127 mm (5 in.) normal to base plane
Projection of apex coincident with point on an arbitrary bisector of base;
point spaced 165.1 mm (6.5 in.) from the corresponding base vertex
Overall Weight: 21.32 kg (47 lbs)
Installation: Base mated to horizontal test surface, arbitrary orientations

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Overall Specimen Properties

Size: 2.89 m (113.625 in) wide by 2.79 m (110.0 in) long
Thickness: 0.13 m (5.0 in)
Weight: 21.32 kg (47.0 lbs)
Mass per Unit Area: 2.64 kg/m² (0.54 lbs/ft²)
Calculation Area: 8.064 m² (86.8 ft²)

Note: Due to the inherently non-rectangular geometry of the specimen installation, the rectangular envelope used to determine the bounds of the specimen geometry includes approximately 0.57 m² (6.16 ft²) of untreated horizontal test surface area. Testing a specimen of identical dimensions with this area treated by similarly-performing material will result in greater measured sound absorption.

Test Environment

Room Volume: 291.98 m³
Temperature: 22.8 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 57.45 % ± 0.3 % (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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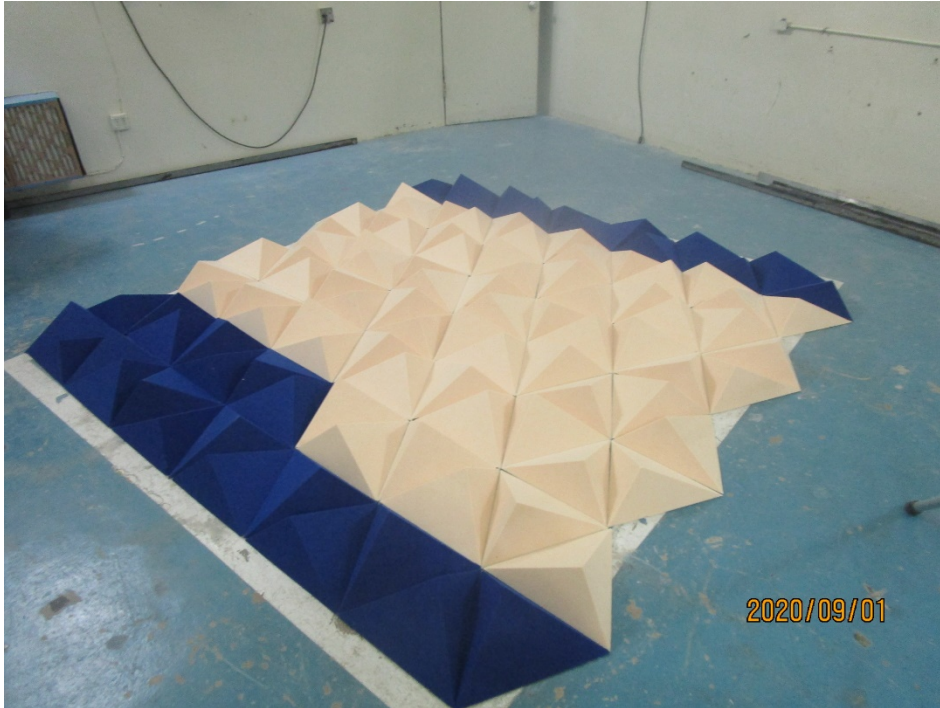


Figure 1 – Specimen mounted in test chamber

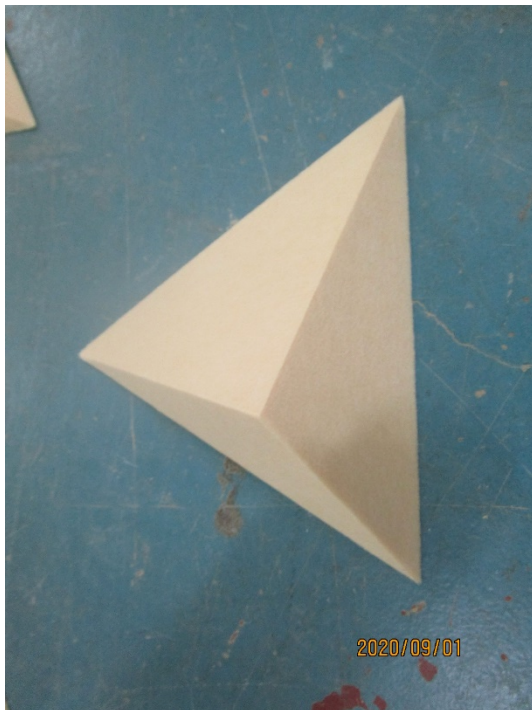


Figure 2 – Detail of individual specimen panel

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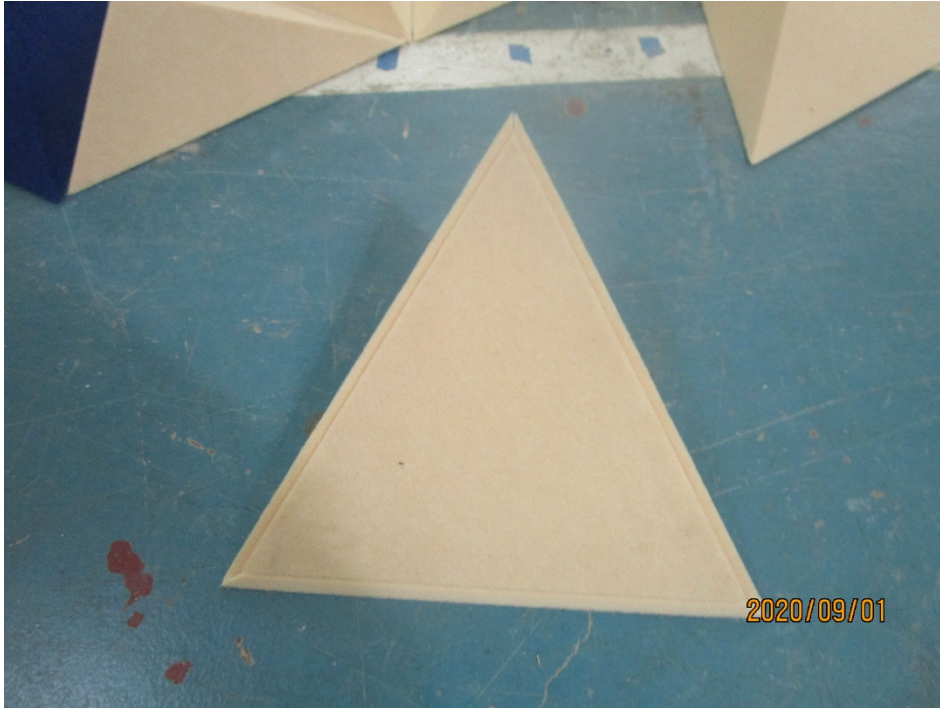


Figure 3 – Underside of individual panel

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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	1.61	17.31	0.20
** 125	1.91	20.53	0.24
160	1.97	21.16	0.24
200	2.42	26.00	0.30
** 250	2.74	29.50	0.34
315	3.86	41.53	0.48
400	4.42	47.62	0.55
** 500	5.31	57.16	0.66
630	5.83	62.73	0.72
800	6.19	66.66	0.77
** 1000	6.47	69.62	0.80
1250	6.86	73.86	0.85
1600	7.07	76.14	0.88
** 2000	7.26	78.19	0.90
2500	7.67	82.52	0.95
3150	7.93	85.34	0.98
** 4000	8.11	87.33	1.01
5000	8.57	92.24	1.06

SAA = 0.68

NRC = 0.70

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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 *Marc Sciaky*
Marc Sciaky
Senior Experimentalist

Report by *Malcolm Kelly*
Malcolm Kelly
Acoustical Test Engineer

Approved by *Eric P. Wolfram*
Eric P. Wolfram
Laboratory Manager



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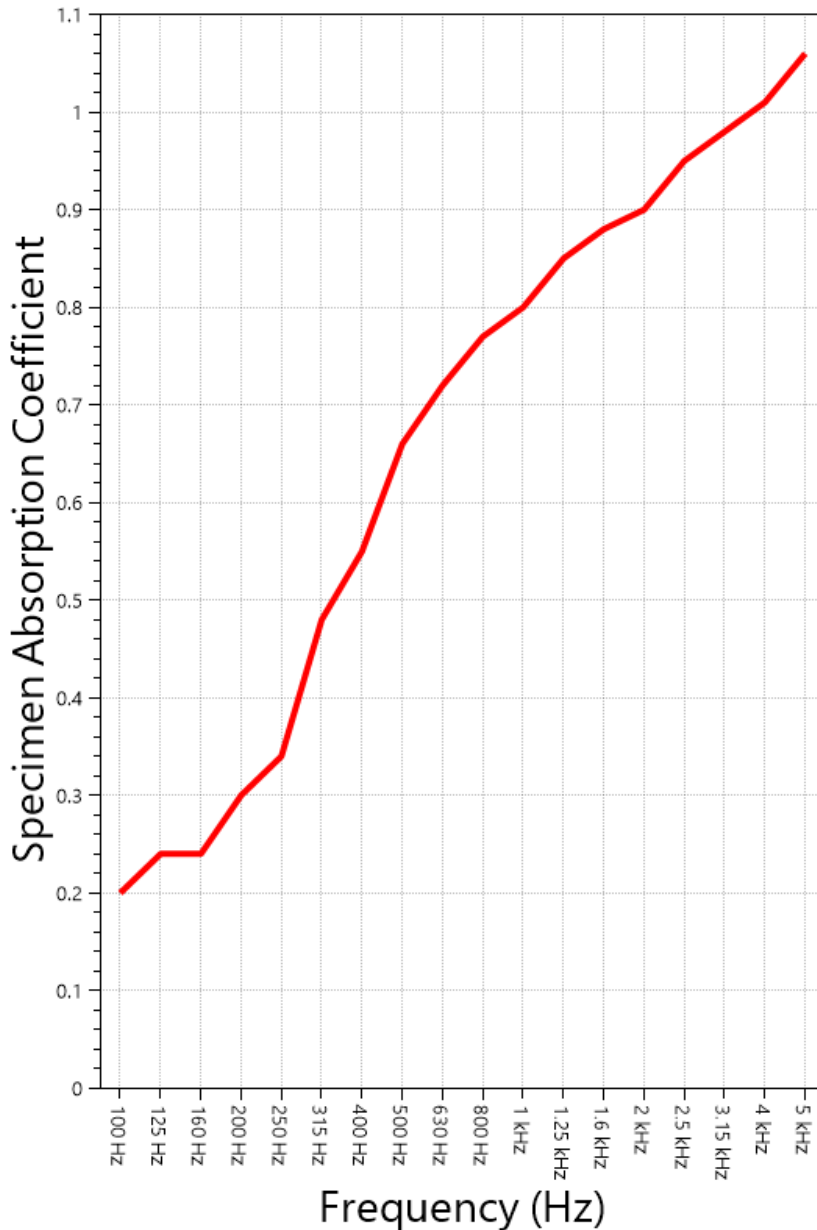
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SOUND ABSORPTION REPORT
PET Pyramid 3D Panel



SAA = 0.68
NRC = 0.70

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APPENDIX A: Extended Frequency Range Data

Specimen: PET Pyramid 3D Panel (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	6.64	0.08
40	8.50	0.10
50	12.43	0.14
63	9.15	0.11
80	15.09	0.17
100	17.31	0.20
125	20.53	0.24
160	21.16	0.24
200	26.00	0.30
250	29.50	0.34
315	41.53	0.48
400	47.62	0.55
500	57.16	0.66
630	62.73	0.72
800	66.66	0.77
1000	69.62	0.80
1250	73.86	0.85
1600	76.14	0.88
2000	78.19	0.90
2500	82.52	0.95
3150	85.34	0.98
4000	87.33	1.01
5000	92.24	1.06
6300	94.17	1.08
8000	96.81	1.12
10000	99.81	1.15
12500	95.88	1.10

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APPENDIX B: Instruments of Traceability

Specimen: PET Pyramid 3D Panel (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 Pyramid 3D Panel (See Full Report)

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

END