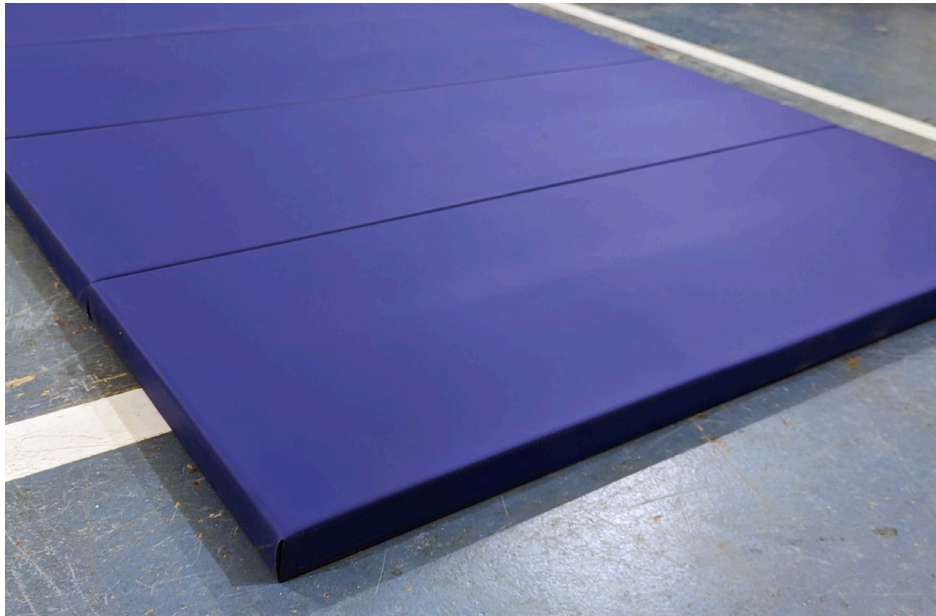


TEST REPORT

SPONSOR: RIVERBANK ACOUSTICAL LABORATORIES | GENEVA, IL



PRODUCT NAME:

GYMNASIUM CRASH PADS (2.5" THICK)

TEST DATE:

AUGUST 7, 2023

TEST METHOD:

ASTM C423-23

RATING:

NRC 0.50

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

Test Report

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SPONSOR: **Riverbank Acoustical Laboratories**
Geneva, IL

Sound Absorption
RAL™-A23-246

CONDUCTED: 2023-08-07

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ON: Gymnasium Crash Pads (2.5 in. thick)

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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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 Standard Gymnasium Crash Pads. 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

Product Name: Typical Gymnasium Crash Pads
Nominal Dimensions: 6 pads @ 24" by 70" by 2.5"

SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Dimensions: 6 pads @ 606 mm (23.875 in.) by 1784 mm (70.25 in.) each
Thickness: 63.73 mm (2.509 in.)
Overall Weight: 61.01 kg (134.5 lbs)
Mass per Unit Volume: Approx. 147 kg/m³ (9.2 lbs/ft³)

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Overall Specimen Properties

Size: 3.65 m (143.625 in) wide by 1.78 m (70.25 in) long
Thickness: 0.06 m (2.509 in)
Weight: 61.01 kg (134.5 lbs)
Mass per Unit Area: 9.37 kg/m² (1.92 lbs/ft²)
Calculation Area: 6.509 m² (70.07 ft²)

Note: The aspect ratio of the test sample approximates a typical field installation of the material under test, but differs from the typical ASTM C423 configuration (see ASTM C423-23 9.1.1.)

Test Environment

Room Volume: 291.98 m³
Temperature: 23.9 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 66.65 % ± 1.3 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 98.4 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 – Individual specimen pad

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Figure 3 – Individual specimen pad

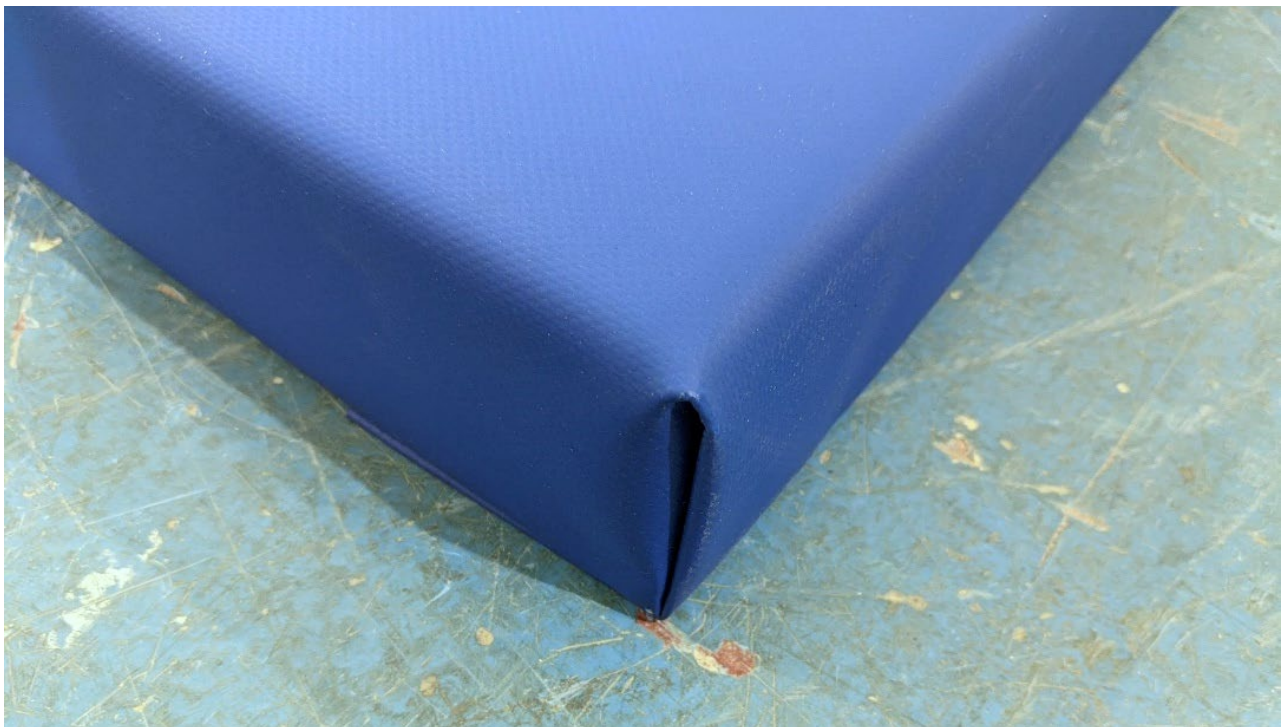


Figure 4 – Detail of specimen material

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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	2.15	23.14	0.33
** 125	2.33	25.03	0.36
160	3.46	37.25	0.53
200	5.24	56.41	0.81
** 250	6.77	72.84	1.04
315	7.12	76.66	1.10
400	6.34	68.25	0.98
** 500	4.82	51.91	0.74
630	3.45	37.11	0.53
800	2.00	21.56	0.31
** 1000	1.22	13.13	0.19
1250	0.93	9.96	0.14
1600	0.76	8.16	0.12
** 2000	0.60	6.45	0.09
2500	0.49	5.26	0.08
3150	0.30	3.20	0.05
** 4000	0.30	3.27	0.05
5000	0.39	4.19	0.06

SAA = 0.51
NRC = 0.50

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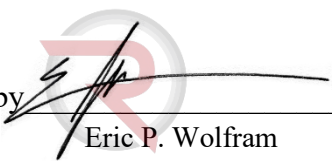
TEST RESULTS (continued)

The sound absorption average (SAA) is defined in ASTM C423-23 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
Senior Experimentalist

Report by 
Keith Kimberling
Test Engineer

Approved by 
Eric P. Wolfram
Laboratory Manager

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Test Report

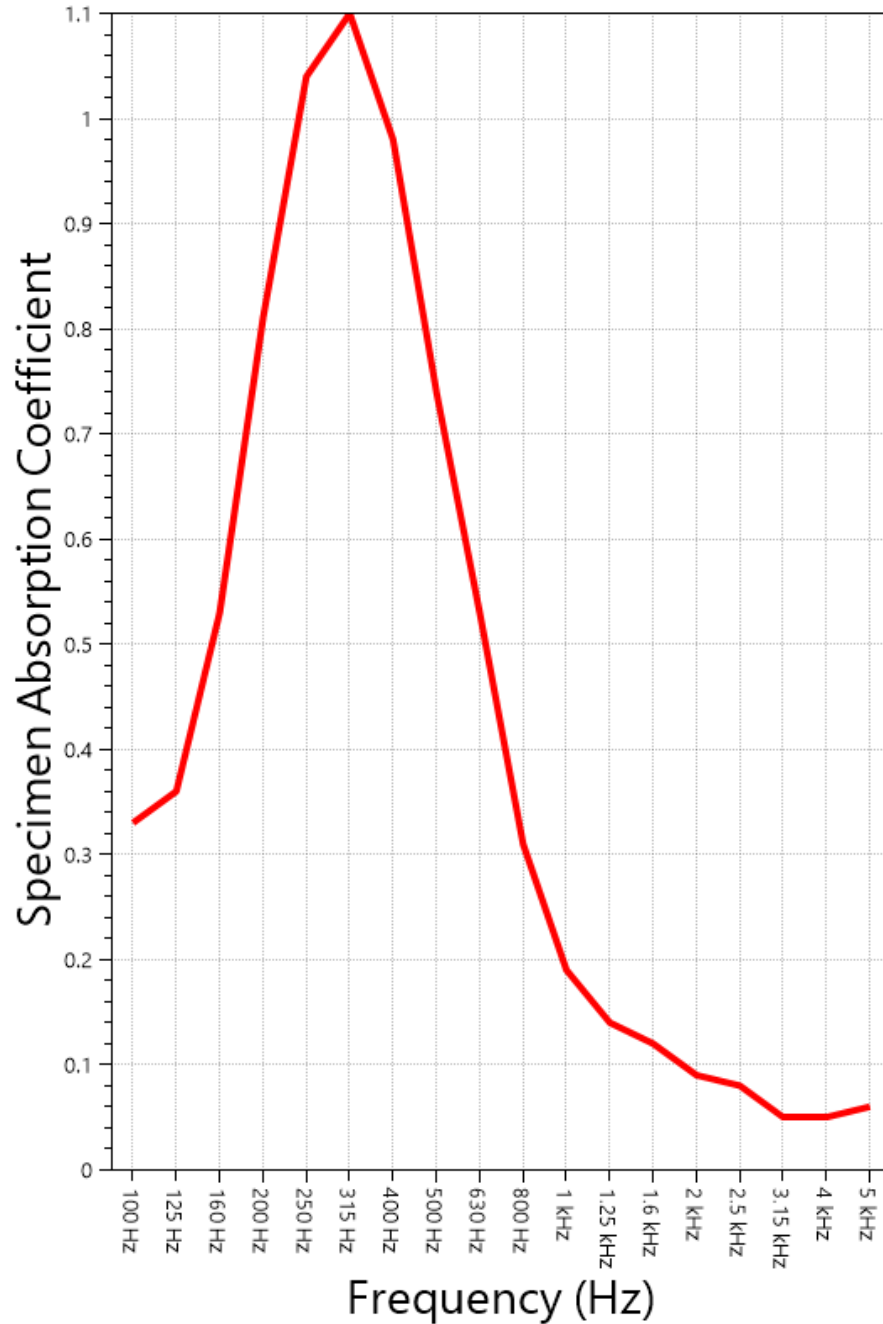
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SOUND ABSORPTION REPORT Standard Gymnasium Crash Pads



SAA = 0.51
NRC = 0.50



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APPENDIX A: Extended Frequency Range Data

Specimen: Standard Gymnasium Crash Pads (See Full Report)

The following non-accredited data were obtained in accordance with ASTM C423-23, 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	6.50	0.09
40	3.60	0.05
50	7.78	0.11
63	-1.48	-0.02
80	10.36	0.15
100	23.14	0.33
125	25.03	0.36
160	37.25	0.53
200	56.41	0.81
250	72.84	1.04
315	76.66	1.10
400	68.25	0.98
500	51.91	0.74
630	37.11	0.53
800	21.56	0.31
1000	13.13	0.19
1250	9.96	0.14
1600	8.16	0.12
2000	6.45	0.09
2500	5.26	0.08
3150	3.20	0.05
4000	3.27	0.05
5000	4.19	0.06
6300	3.05	0.04
8000	4.83	0.07
10000	5.06	0.07
12500	6.73	0.1



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APPENDIX B: Instruments of Traceability

Specimen: Standard Gymnasium Crash Pads (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	2023-07-17	2024-07-17
Bruel & Kjaer Mic And Preamp G	Type 4943-B-001	2525858	2023-05-03	2024-05-03
Bruel & Kjaer Pistonphone	Type 4228	2781248	2023-07-12	2024-07-12
EXTECH Hygro 639	SD700	A.103639	2022-12-07	2023-12-07

APPENDIX C: Revisions to Original Test Report

Specimen: Standard Gymnasium Crash Pads (See Full Report)

<u>Date</u>	<u>Revision</u>
2023-08-15	Original report issued

END