

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

Test Report

www.riverbankacoustics.com

FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **Rusher Products LLC**
Yankton, SD

Sound Absorption
RAL™-A22-451

CONDUCTED: 2022-10-18

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ON: Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing

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 C423-22: "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 Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing. 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: Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing
Nominal Panel Dimensions: 16 tiles @ 23.62" by 23.62"
4 tiles @ 23.625" by 11.8"
Manufacturer: Rusher Products LLC

Rusher Products LLC
2022-10-18

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SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Material: Corrugated perforated metal tiles with fibrous backing
Dimensions: 16 tiles @ 603 mm (23.75 in.) by 603 mm (23.75 in.)
4 tiles @ 305 mm (12 in.) by 603 mm (23.75 in.)
Depth: Total @ 32.27 mm (1.2705 in.)
Backing only @ 25.91 mm (1.02 in.)
Perforation Pitch: Triangular pitch @ 4.8 mm (0.189 in.)
Perforation Diameter: 2.5 mm (0.098 in.)
Overall Weight: 19.05 kg (42 lbs)

Overall Specimen Properties

Size: 2.72 m (107.0 in) wide by 2.41 m (95.0 in) long
Thickness: 0.03 m (1.2705 in)
Weight: 19.05 kg (42.0 lbs)
Mass per Unit Area: 2.9 kg/m² (0.59 lbs/ft²)
Calculation Area: 6.558 m² (70.59 ft²)

Test Environment

Room Volume: 291.98 m³
Temperature: 21.0 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 58.5 % ± 0.6 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 98.8 kPa (Requirement not defined)

MOUNTING METHOD

Type E-400 Mounting: The test specimen was mounted across a metal fixture which was open at its top and bottom and enclosed at its sides, creating an enclosed airspace between the test specimen and the horizontal test surface. The numeral suffix in the designation is defined in ASTM E795-16 as the distance in millimeters from the exposed face of the test specimen to the test surface, rounded to the nearest integer multiple of 5. Perimeter edges were sealed with metal framing.

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Figure 1 – Specimen mounted in test chamber



Figure 2 – Individual specimen tile

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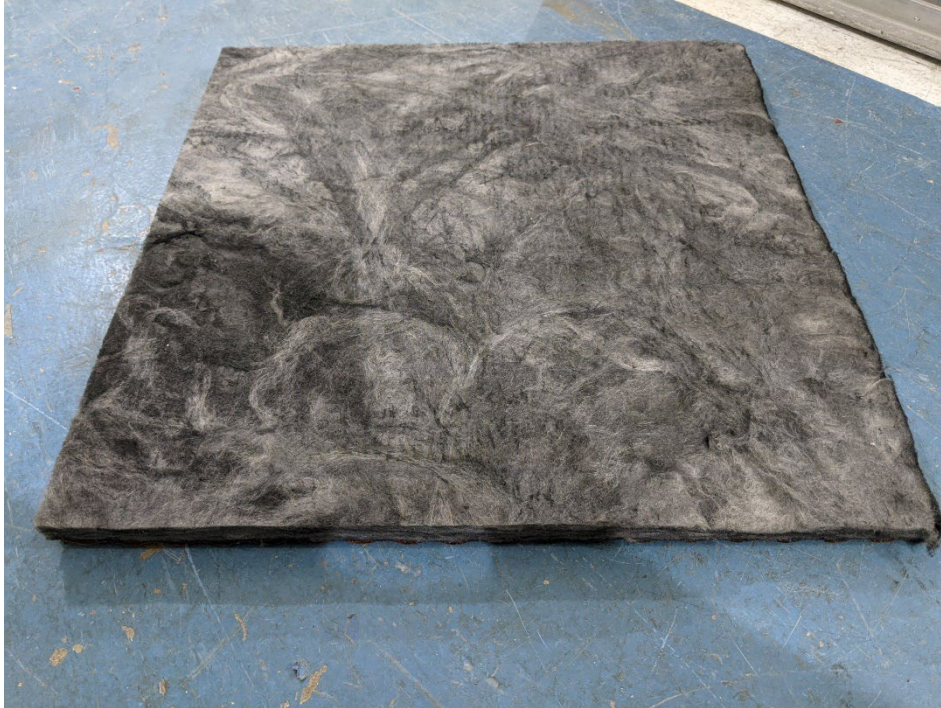


Figure 3 – Individual specimen tile

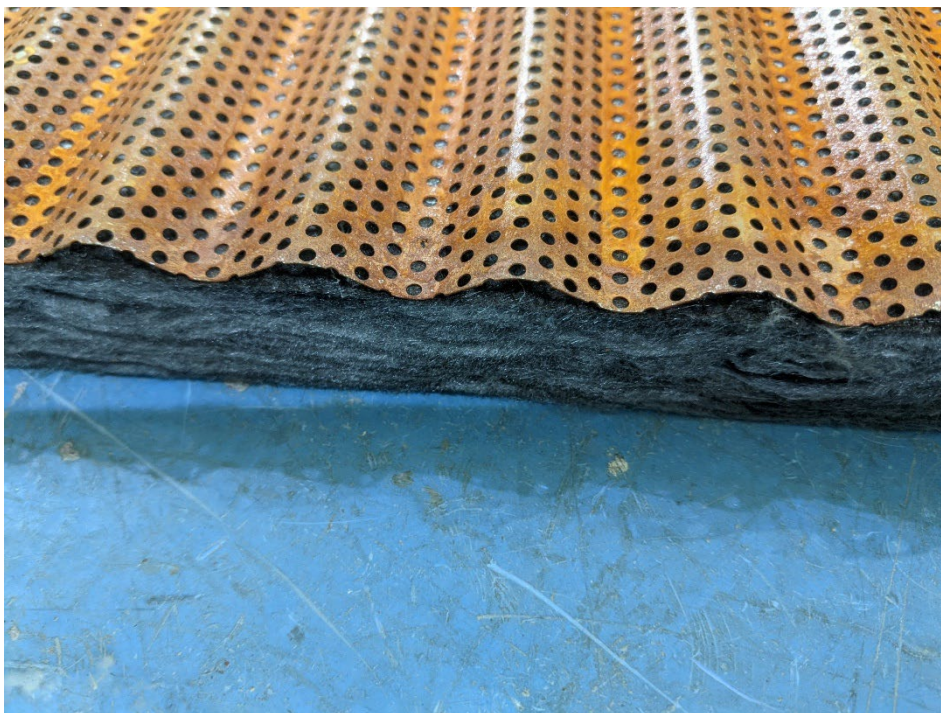


Figure 4 – Detail of specimen materials

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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	5.40	58.08	0.82
** 125	4.93	53.03	0.75
160	4.67	50.26	0.71
200	5.66	60.88	0.86
** 250	5.73	61.67	0.87
315	5.21	56.11	0.79
400	4.67	50.31	0.71
** 500	4.35	46.83	0.66
630	5.13	55.27	0.78
800	5.66	60.88	0.86
** 1000	5.68	61.12	0.87
1250	6.01	64.71	0.92
1600	6.14	66.08	0.94
** 2000	5.84	62.90	0.89
2500	5.99	64.49	0.91
3150	6.22	66.94	0.95
** 4000	6.20	66.72	0.95
5000	5.96	64.19	0.91

SAA = 0.84
NRC = 0.80

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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.

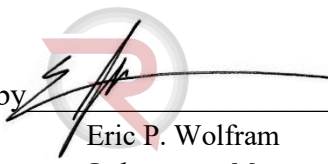
The noise reduction coefficient (NRC) is defined from previous versions of ASTM C423 as the arithmetic average of the sound absorption coefficients at 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz, rounded to the nearest integer multiple of 0.05.

Tested by 


Marc Sciaky
Senior Experimentalist

Report by 

Keith Kimberling
Test Engineer

Approved by 

Eric P. Wolfram
Laboratory Manager

 Digitally signed by
Eric P Wolfram
Date: 2022.10.27
11:21:01 -05'00'

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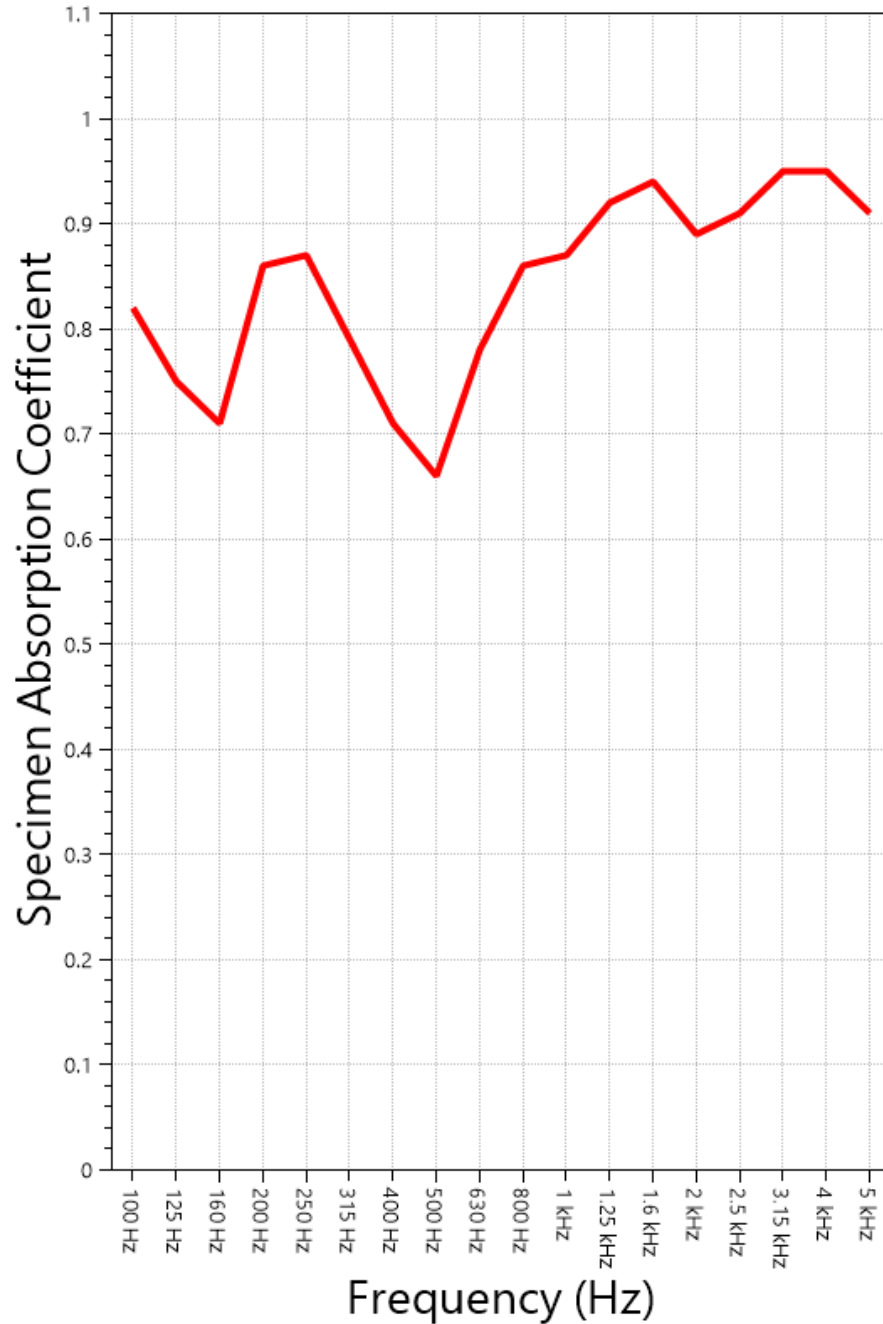
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SOUND ABSORPTION REPORT

Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing



SAA = 0.84

NRC = 0.80



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APPENDIX A: Extended Frequency Range Data

Specimen: Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing (See Full Report)

The following non-accredited data were obtained in accordance with ASTM C423-22, 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	18.64	0.26
40	13.75	0.19
50	34.69	0.49
63	29.77	0.42
80	18.45	0.26
100	58.08	0.82
125	53.03	0.75
160	50.26	0.71
200	60.88	0.86
250	61.67	0.87
315	56.11	0.79
400	50.31	0.71
500	46.83	0.66
630	55.27	0.78
800	60.88	0.86
1000	61.12	0.87
1250	64.71	0.92
1600	66.08	0.94
2000	62.90	0.89
2500	64.49	0.91
3150	66.94	0.95
4000	66.72	0.95
5000	64.19	0.91
6300	62.92	0.89
8000	53.90	0.76
10000	45.68	0.65
12500	32.54	0.46



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APPENDIX B: Instruments of Traceability

Specimen: Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing (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	2022-07-12	2023-07-12
Bruel & Kjaer Mic And Preamp C	Type 4943-B-001	2311439	2022-05-02	2023-05-02
Bruel & Kjaer Pistonphone	Type 4228	2781248	2022-07-22	2023-07-22
EXTECH Hygro 959	SD700	A099959	2022-03-22	2023-03-22

APPENDIX C: Revisions to Original Test Report

Specimen: Colorado Perforated Acoustical Metal Ceiling Tiles with Sound Board Backing (See Full Report)

<u>Date</u>	<u>Revision</u>
2022-10-19	Original report issued

END