

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

Test Report

www.riverbankacoustics.com

FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **MCM Acoustical**
Mississauga, Ontario, Canada

Sound Absorption
RAL™-A22-473

CONDUCTED: 2022-10-27

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ON: Perforated Panels over 2" 6pcf unfaced fiberglass insulation

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.

SPECIMEN MEASUREMENTS & TEST CONDITIONS

The test specimen was designated by the sponsor as Perforated Panels over 2" 6pcf unfaced fiberglass insulation. Through a full external visual inspection performed on the test specimen, Riverbank personnel verified the following information:

Base Layer

Material: Unfaced fiberglass insulation
Dimensions: 8 pieces @ 610 mm (24 in.) by 1219 mm (48 in.)
2 pieces @ 305 mm (12 in.) by 1219 mm (48 in.)
Thickness: 51 mm (2 in.)
Overall Weight: 33 kg (72.75 lbs)
Mass per Unit Volume: 97.1 kg/m³ (6.06 lbs/ft³)

Test Specimen

Material: Perforated wood panels with non-woven backing
Dimensions: 4 panels @ 1372 mm (54 in.) by 1219 mm (48 in.)
Thickness: 17.12 mm (0.674 in.)
Perforation Pitch: Square pitch @ 16 mm (0.63 in.)
Perforation Diameter: 8 mm (0.315 in.)
Overall Weight: 76.88 kg (169.5 lbs)
Mass per Unit Volume: 671 kg/m³ (41.9 lbs/ft³)

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Overall Specimen Properties

Size: 2.74 m (108.0 in) wide by 2.44 m (96.0 in) long
Thickness: 0.07 m (2.674 in)
Weight: 109.88 kg (242.25 lbs)
Mass per Unit Area: 16.43 kg/m² (3.36 lbs/ft²)
Calculation Area: 6.689 m² (72. ft²)

Test Environment

Room Volume: 291.98 m³
Temperature: 21.3 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 59.85 % ± 3.9 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 99.8 kPa (Requirement not defined)

MOUNTING METHOD

Type F-50 Mounting: The test specimen was laid directly against the test surface such that the mounting hardware acted as spacers, creating a 51 mm (2 in.) thick airspace between the test surface and the fiberglass base layer. The numeral suffix in the mounting designation is the thickness of the spacers in millimeters, rounded to the nearest integer multiple of 5. Perimeter edges were sealed with metal framing and tape.

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Figure 1 – Specimen mounted in test chamber

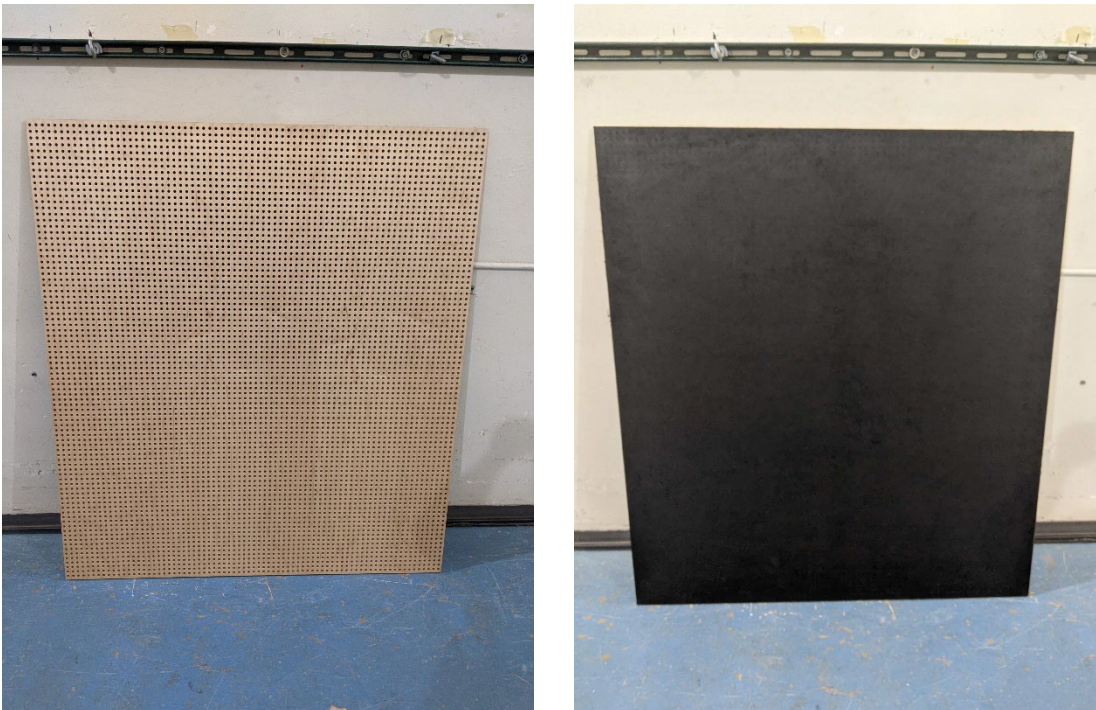


Figure 2 – Individual specimen panel

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Figure 3 – Base layer of fiberglass partially installed over spacers



Figure 4 – Specimen panels partially installed over base layer fiberglass

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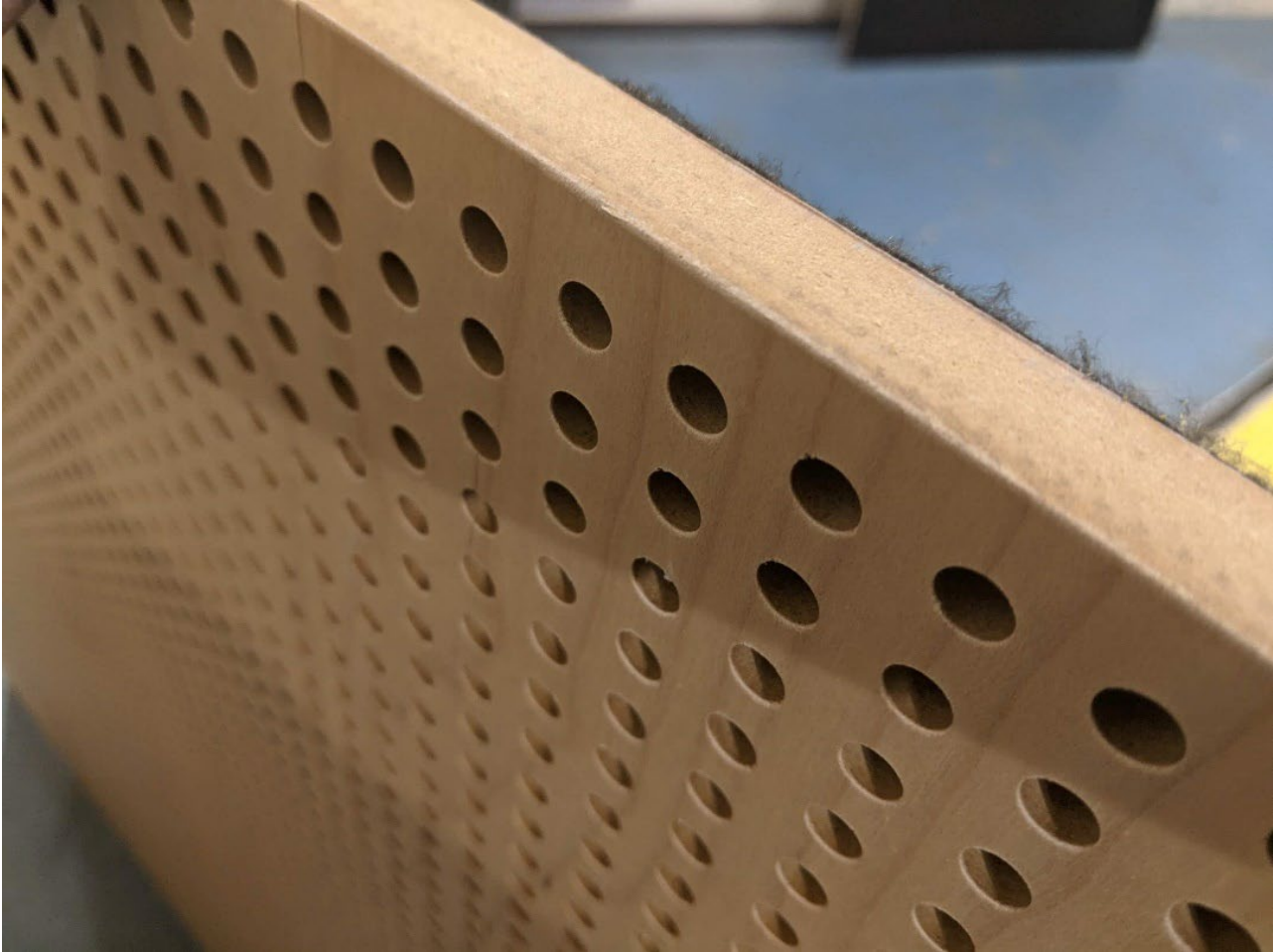


Figure 5 – Detail of specimen materials

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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	4.16	44.78	0.62
** 125	4.56	49.05	0.68
160	5.07	54.60	0.76
200	6.00	64.54	0.90
** 250	5.84	62.85	0.87
315	6.17	66.47	0.92
400	6.09	65.55	0.91
** 500	6.30	67.82	0.94
630	6.17	66.40	0.92
800	6.12	65.92	0.92
** 1000	6.03	64.94	0.90
1250	6.01	64.66	0.90
1600	6.02	64.77	0.90
** 2000	5.81	62.51	0.87
2500	5.69	61.20	0.85
3150	5.37	57.85	0.80
** 4000	4.81	51.83	0.72
5000	5.29	56.97	0.79

SAA = 0.90

NRC = 0.90

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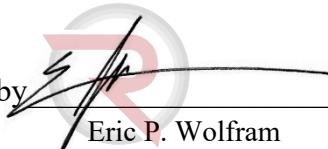
TEST RESULTS (continued)

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

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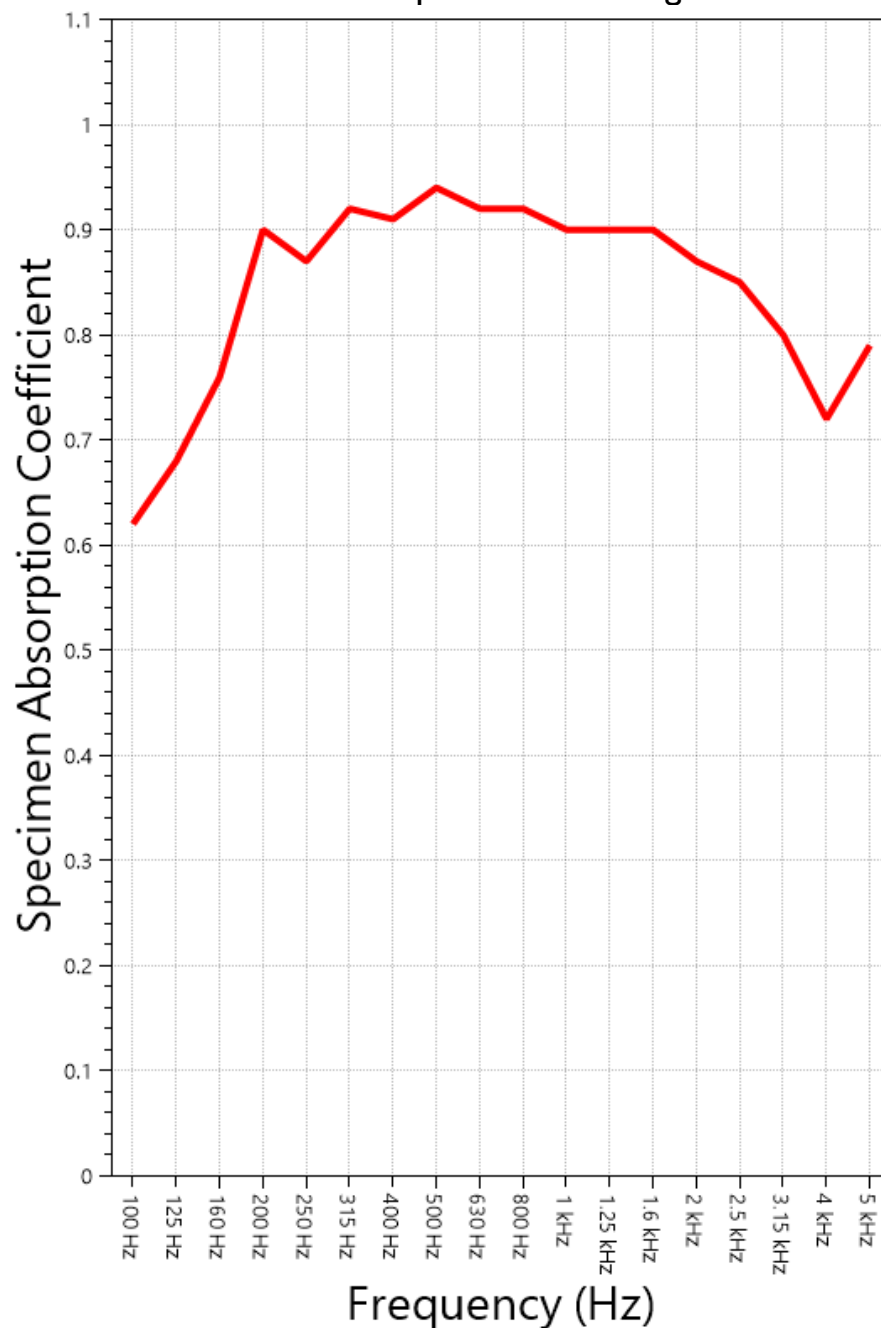
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SOUND ABSORPTION REPORT

Perforated Panels over 2" 6pcf unfaced fiberglass insulation



SAA = 0.90

NRC = 0.90



NVLAP LAB CODE 100227-0

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APPENDIX A: Extended Frequency Range Data

Specimen: Perforated Panels over 2" 6pcf unfaced fiberglass insulation (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	6.29	0.09
40	14.39	0.20
50	9.10	0.13
63	8.40	0.12
80	27.98	0.39
100	44.78	0.62
125	49.05	0.68
160	54.60	0.76
200	64.54	0.90
250	62.85	0.87
315	66.47	0.92
400	65.55	0.91
500	67.82	0.94
630	66.40	0.92
800	65.92	0.92
1000	64.94	0.90
1250	64.66	0.90
1600	64.77	0.90
2000	62.51	0.87
2500	61.20	0.85
3150	57.85	0.80
4000	51.83	0.72
5000	56.97	0.79
6300	63.67	0.88
8000	58.60	0.81
10000	50.63	0.70
12500	39.66	0.55

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APPENDIX B: Instruments of Traceability

Specimen: Perforated Panels over 2" 6pcf unfaced fiberglass insulation (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: Perforated Panels over 2" 6pcf unfaced fiberglass insulation (See Full Report)

<u>Date</u>	<u>Revision</u>
2022-11-07	Original report issued

END