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

An ALION Technical Center

Test Report

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FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **MCM Acoustical**
Toronto, ON, Canada

Sound Absorption
RAL™-A20-216

CONDUCTED: 2020-06-11

ON: 3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting)

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 3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting). 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

Perforated Panel	
Trade Name:	Mini Perforated Panel
Thickness:	19.05 mm (0.75 in.)
Manufacturer:	MCM Acoustical
Base Layer	
Material:	Fiberglass
Thickness:	50.8 mm (2 in.)
Density:	96-112 kg/m^3(6-7 lbs/ft^3)

SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Base Layer

Material:	Rigid fiberglass insulation board
Dimensions:	8 @ 609.6 mm (24 in.) x 1219.2 mm (48 in.)
	2 @ 304.8 mm (12 in.) x 1219.2 mm (48 in.)
Thickness:	50.8 mm (2 in.)
Overall Weight:	31.75 kg (70 lbs)
Density:	93.4 kg/m^3 (5.83 lbs/ft^3)

Perforated Panel

Materials:	Perforated wood veneer over perforated medium density fiberboard core, adhered nonwoven textile backer
Dimensions:	6 @ 914.4 mm (36 in.) x 1219.2 mm (48 in.)
Thickness:	16.89 mm (0.665 in.)
Face Perforations:	Circular holes, diameter @ approximately 1.5 mm (0.059 in.) Square pitch @ 8 mm (0.315 in.) on center
Core Perforations:	Circular holes, diameter @ 12.5 mm (0.492 in.) Square pitch @ 16 mm (0.63 in.) on center
Overall Weight:	54.77 kg (120.75 lbs)
Installation:	Loose laid over base layer Perforated wood veneer exposed to sound field

Overall Specimen Properties

Size:	2.74 m (108.0 in) wide by 2.44 m (96.0 in) long
Thickness:	0.07 m (2.665 in)
Weight:	86.52 kg (190.75 lbs)
Mass per Unit Area:	12.94 kg/m² (2.65 lbs/ft²)
Calculation Area:	6.689 m² (72 ft²)

Test Environment

Room Volume:	291.98 m³
Temperature:	22.1 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	60.95 % ± 1.3 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	99.1 kPa (Requirement not defined)

MOUNTING METHOD

Type F-50 Mounting: The test specimen was laid atop an array of 50 mm (1.969 in.) thick wooden spacers, creating an air space between the test specimen and the horizontal test surface. The numeral suffix in the mounting designation is defined as the thickness of the spacers in millimeters, rounded to the nearest integer multiple of 5. Perimeter edges were sealed with wood and metal framing.

Figure 1 – Specimen mounted in test chamber

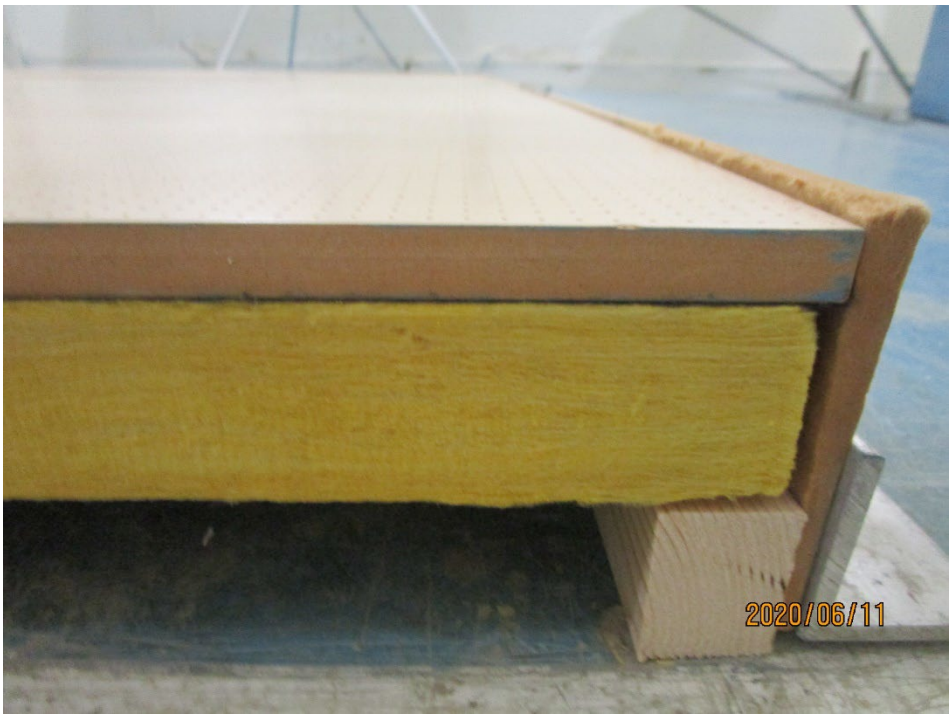

Figure 2 – Specimen and edge seal configuration, air space between specimen and test surface

Figure 3 – Individual perforated panel, face exposed to sound field

Figure 4 – Individual perforated panel, face mated to base layer

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	4.02	43.29	0.60
** 125	5.19	55.83	0.78
160	5.76	61.96	0.86
200	7.00	75.35	1.05
** 250	7.19	77.44	1.08
315	7.33	78.94	1.10
400	7.60	81.80	1.14
** 500	7.49	80.59	1.12
630	6.90	74.27	1.03
800	6.78	72.94	1.01
** 1000	6.22	66.90	0.93
1250	5.57	60.00	0.83
1600	4.65	50.03	0.69
** 2000	3.68	39.64	0.55
2500	2.81	30.29	0.42
3150	2.41	25.99	0.36
** 4000	1.90	20.40	0.28
5000	1.39	14.95	0.21

SAA = 0.91
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 _____
Dean Victor
Lead Experimentalist

Report by _____
Malcolm Kelly
Acoustical Test Engineer

Approved by _____
Eric P. Wolfram
Laboratory Manager

Digitally signed by Eric P Wolfram
Date: 2022.02.18 15:04:33 -06'00'

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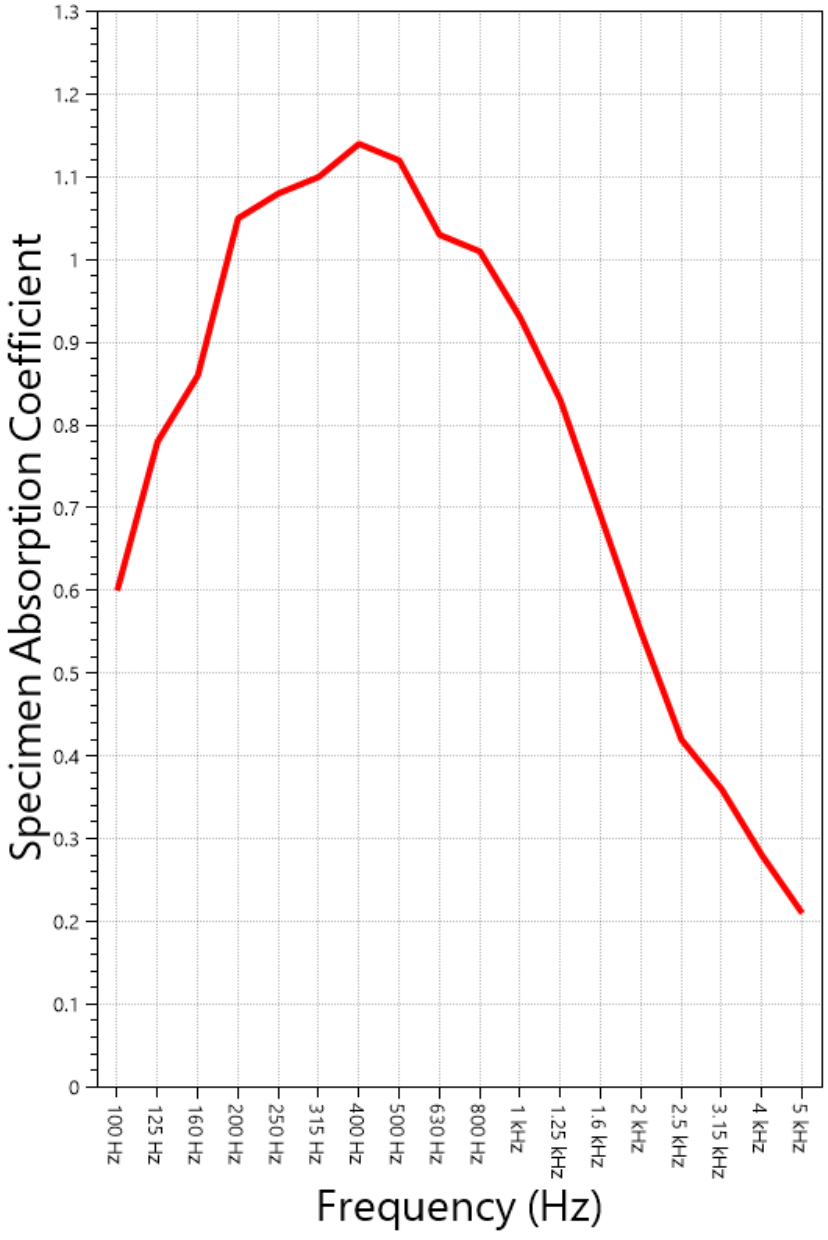
SOUND ABSORPTION REPORT

3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting)



SAA = 0.91
NRC = 0.90

APPENDIX A: Extended Frequency Range Data

Specimen: 3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting) (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	-4.74	-0.07
40	9.68	0.13
50	15.17	0.21
63	7.76	0.11
80	21.32	0.30
100	43.29	0.60
125	55.83	0.78
160	61.96	0.86
200	75.35	1.05
250	77.44	1.08
315	78.94	1.10
400	81.80	1.14
500	80.59	1.12
630	74.27	1.03
800	72.94	1.01
1000	66.90	0.93
1250	60.00	0.83
1600	50.03	0.69
2000	39.64	0.55
2500	30.29	0.42
3150	25.99	0.36
4000	20.40	0.28
5000	14.95	0.21
6300	13.91	0.19
8000	11.78	0.16
10000	9.43	0.13
12500	12.87	0.18

APPENDIX B: Instruments of Traceability

Specimen: 3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting) (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 1	Type 3160-A-042	3160-106968	2019-06-25	2020-06-25
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2019-09-27	2020-09-27
Bruel & Kjaer Pistonphone	Type 4228	2781248	2019-08-09	2020-08-09
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: 3/4 in. thick Mini Perforated wood panel over 2 in. Fiberglass (Type F-50 mounting) (See Full Report)

Date	Revision
2020-06-12	Original report issued
2020-07-30	Page 1, Information Provided By Sponsor: Panel nominal thickness, base layer nominal thickness, and base layer nominal density were added. Pages 1, 7-9: The nominal panel thickness was added to the specimen designation. Page 2, Perforated Panel: Open area ratio estimates for perforation patterns were removed.
2022-02-17	All pages: Sponsor's name changed to accommodate their revised corporate branding. -MP

END