

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

An  ALION Technical Center

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FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

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

**Sound Absorption**  
**RAL™-A20-217**

CONDUCTED: 2020-06-11

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ON: 3/4 in. thick 8mm Grooved 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 8mm Grooved 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**

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##### **Grooved Panel**

Trade Name: 8mm Grooved 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<sup>3</sup>(6-7 lbs/ft<sup>3</sup>)

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### **Base Layer**

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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<sup>3</sup> (5.83 lbs/ft<sup>3</sup>)

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### Grooved Panel

- Materials: Grooved wood veneer over perforated/grooved 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 Grooves: Trapezoidal profile, width decreases with depth  
Depth @ 4 mm (0.157 in.)  
Opening width at top @ 3 mm (0.118 in.)  
Opening width at bottom @ 2 mm (0.079 in.)  
Pitch @ 8 mm (0.315 in.)
- Core Perforations: Circular holes, diameter @ 8 mm (0.315 in.)  
Staggered rectangular pitch, rows @ 8 mm (0.315 in.), columns @ 32 mm (1.26 in.), staggered 16 mm (0.63 in.) between rows  
Approximately 19.6 % open area
- Core Grooves: Rectangular profile, superimposed over perforation rows  
Cut into bottom face of core material  
Depth @ 4 mm (0.157 in.)  
Width @ 4 mm (0.157 in.)  
Pitch @ 32 mm (1.26 in.)
- Overall Weight: 70.08 kg (154.5 lbs)
- Installation: Loose laid over base layer  
Grooved wood veneer exposed to sound field

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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 (2.665 in)  
Weight: 101.83 kg (224.5 lbs)  
Mass per Unit Area: 15.22 kg/m<sup>2</sup> (3.12 lbs/ft<sup>2</sup>)  
Calculation Area: 6.689 m<sup>2</sup> (72 ft<sup>2</sup>)

### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 22.1 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 60.5 % ± 0.4 % (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.

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Figure 1 – Specimen mounted in test chamber



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



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



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

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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 <sup>2</sup> )	Total Absorption (Sabins)	Absorption Coefficient
100	3.73	40.17	0.56
** 125	4.93	53.05	0.74
160	5.33	57.37	0.80
200	6.80	73.18	1.02
** 250	6.91	74.35	1.03
315	6.81	73.30	1.02
400	7.02	75.52	1.05
** 500	6.85	73.71	1.02
630	6.63	71.33	0.99
800	6.45	69.42	0.96
** 1000	6.01	64.67	0.90
1250	6.02	64.79	0.90
1600	5.81	62.54	0.87
** 2000	5.57	59.99	0.83
2500	5.11	54.99	0.76
3150	4.83	51.94	0.72
** 4000	4.48	48.22	0.67
5000	4.36	46.90	0.65

**SAA = 0.95**  
**NRC = 0.95**

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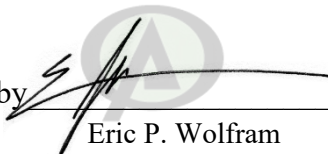
TEST RESULTS (continued)

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

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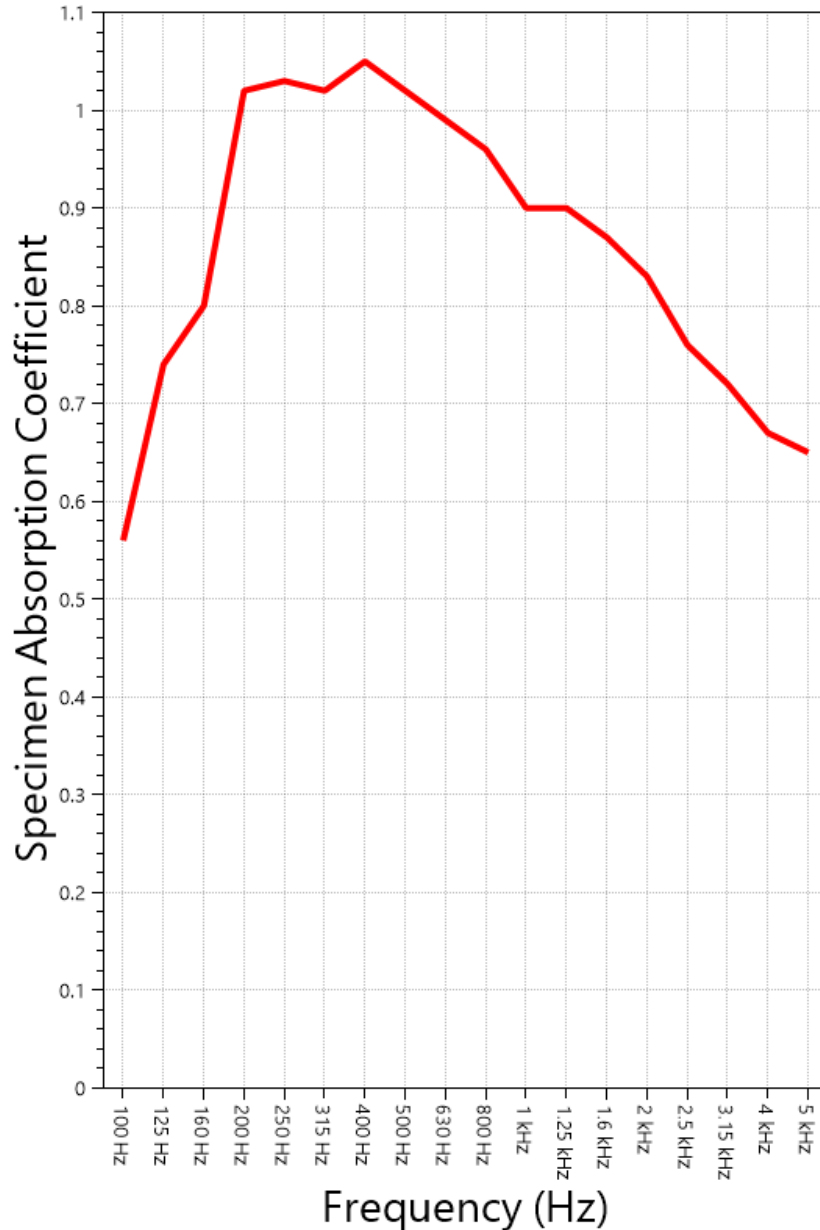
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### SOUND ABSORPTION REPORT

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**SAA = 0.95**

**NRC = 0.95**



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### APPENDIX A: Extended Frequency Range Data

Specimen: 3/4 in. thick 8mm Grooved 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	-6.21	-0.09
40	12.93	0.18
50	19.30	0.27
63	11.49	0.16
80	12.11	0.17
100	40.17	0.56
125	53.05	0.74
160	57.37	0.80
200	73.18	1.02
250	74.35	1.03
315	73.30	1.02
400	75.52	1.05
500	73.71	1.02
630	71.33	0.99
800	69.42	0.96
1000	64.67	0.90
1250	64.79	0.90
1600	62.54	0.87
2000	59.99	0.83
2500	54.99	0.76
3150	51.94	0.72
4000	48.22	0.67
5000	46.90	0.65
6300	54.86	0.76
8000	48.84	0.68
10000	35.87	0.50
12500	27.75	0.39

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**APPENDIX B: Instruments of Traceability**

Specimen: 3/4 in. thick 8mm Grooved wood panel over 2 in. Fiberglass (Type F-50 mounting) (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	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 8mm Grooved wood panel over 2 in. Fiberglass (Type F-50 mounting) (See Full Report)

<u>Date</u>	<u>Revision</u>
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, 8-10: The nominal panel thickness was added to the specimen designation. Page 2, Grooved Panel: Open area ratio estimates for perforation patterns were removed. Pages 1-10: The adjective “slotted” was replaced with the synonym “grooved”.
2022-02-17	All pages: Sponsor’s name changed to accommodate their revised corporate branding. -MP

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END