1512 S BATAVIA AVENUE
GENEVA, IL 60134

630-232-0104

An ALION Technical Center

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WALLACE CLEMENT SABINE

Test Report

SPONSOR: **Mayne Inc.**
Langley, British Columbia, Canada

Sound Absorption
RAL™-A19-488

CONDUCTED: 2019-12-02

ON: Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer

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 Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer. 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

Trade Name:	Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks)
Width:	63.5 mm (2.5 in.)
Backer Density:	48.1 kg/m^3 (3 lbs/ft^3)
Manufacturer:	Longboard Products

SPECIMEN MEASUREMENTS & TEST CONDITIONS

Through a full external visual 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:	25.4 mm (1 in.)
Overall Weight:	7.94 kg (17.5 lbs)
Density:	46.7 kg/m^3 (2.92 lbs/ft^3)

Perforated Planks

Materials:	Perforated metal planks, tongue and groove joints
Dimensions:	42 @ 79.38 mm (3.125 in.) x 2438.4 mm (96 in.)
	Width @ 63.5 mm (2.5 in.) excluding tongue
Thickness:	Overall @ 11.25 mm (0.443 in.)
	Metal wall @ 1.65 mm (0.065 in.)
Perforations:	Circular holes @ 3 mm (0.118 in.) diameter
	Rectangular grid, rows staggered by 3.33 mm (0.131 in.)
	Pitch along plank length @ 6.67 mm (0.263 in.)
	Pitch along plank width @ 4 mm (0.157 in.)
	Approximately 26.5 % open area
Overall Weight:	37.53 kg (82.75 lbs)
Installation:	Planks joined, laid over base layer

Overall Specimen Properties

Size:	2.74 m (108.0 in) wide by 2.44 m (96.0 in) long
Thickness:	0.04 m (1.443 in)
Weight:	45.47 kg (100.25 lbs)
Mass per Unit Area:	6.8 kg/m² (1.39 lbs/ft²)
Calculation Area:	6.689 m² (72 ft²)

Test Environment

Room Volume:	291.98 m³
Temperature:	21.4 °C ± 0.2 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	53.9 % ± 0.8 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	98.9 kPa (Requirement not defined)

MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Perimeter edges were sealed with metal framing.

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Figure 1 – Specimen mounted in test chamber

Figure 2 – Detail of tongue and groove design, plank joints

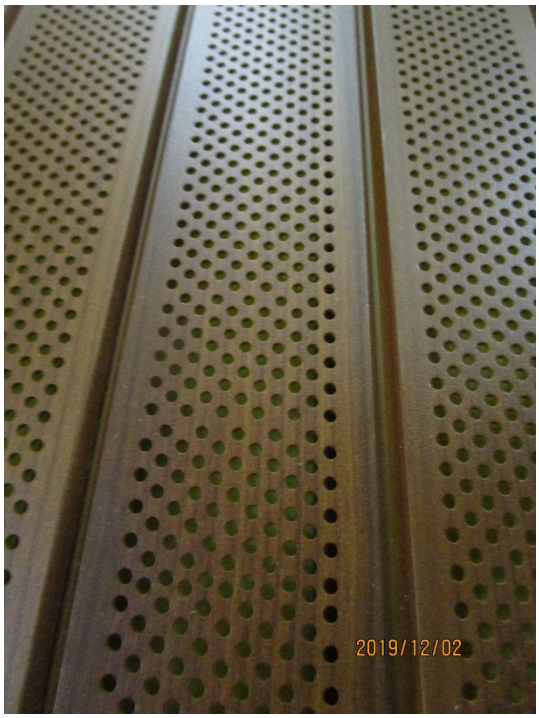

Figure 3 – Detail of perforation pattern

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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	0.41	4.39	0.06
** 125	0.66	7.13	0.10
160	0.43	4.63	0.06
200	1.30	13.98	0.19
** 250	1.50	16.15	0.22
315	2.70	29.09	0.40
400	3.58	38.53	0.54
** 500	4.85	52.26	0.73
630	5.66	60.94	0.85
800	6.07	65.31	0.91
** 1000	6.45	69.48	0.96
1250	6.70	72.06	1.00
1600	6.57	70.70	0.98
** 2000	6.48	69.76	0.97
2500	5.78	62.25	0.86
3150	5.21	56.09	0.78
** 4000	5.22	56.22	0.78
5000	5.20	55.99	0.78

SAA = 0.72
NRC = 0.70

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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 _____
Malcolm Kelly
Acoustical Test Engineer

Approved by _____
Eric P. Wolfram
Laboratory Manager

Digitally signed by Eric P Wolfram
Location: Geneva, IL
Date: 2019.12.17 13:12:26 -06'00'

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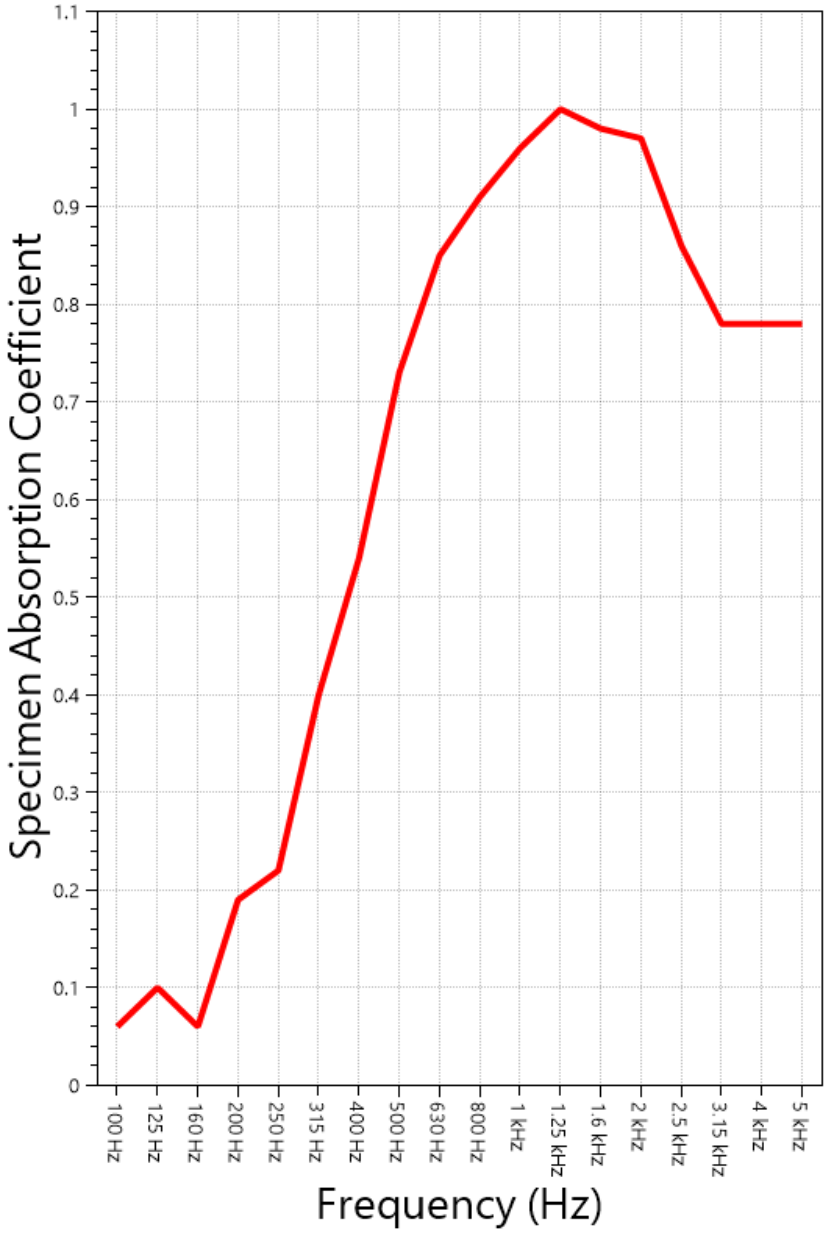
SOUND ABSORPTION REPORT

Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer



SAA = 0.72
NRC = 0.70

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APPENDIX A: Extended Frequency Range Data

Specimen: Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer (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	-6.48	-0.09
40	2.98	0.04
50	3.46	0.05
63	-5.49	-0.08
80	2.26	0.03
100	4.39	0.06
125	7.13	0.10
160	4.63	0.06
200	13.98	0.19
250	16.15	0.22
315	29.09	0.40
400	38.53	0.54
500	52.26	0.73
630	60.94	0.85
800	65.31	0.91
1000	69.48	0.96
1250	72.06	1.00
1600	70.70	0.98
2000	69.76	0.97
2500	62.25	0.86
3150	56.09	0.78
4000	56.22	0.78
5000	55.99	0.78
6300	49.59	0.69
8000	42.55	0.59
10000	44.34	0.62
12500	46.10	0.64

APPENDIX B: Instruments of Traceability

Specimen: Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer (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	2019-02-08	2020-02-08

APPENDIX C: Revisions to Original Test Report

Specimen: Linear Metal Ceilings: Perforated Planks (2.5 in. v-groove planks) with fiberglass backer (See Full Report)

Date	Revision
2019-12-16	Original report issued

END