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

An A L I O N Technical Center

Test Report

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FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **Scandinavian Spaces**
Austin, TX

Sound Absorption
RAL™-A21-172

CONDUCTED: 2021-03-02

ON: Arc panels

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 Arc panels. 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:	Arc
Material ID:	A44
Material:	Polyester molded felt in 50% recycled plastic (polyethylene terephthalate)
Manufacturer:	Bla Station – Ahus, Sweden

SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Materials:	Molded 4 mm (0.157 in.) thick felt shell with two (2) felt supports at underside Approx. 1 mm (0.039 in.) thick felt veneer adhered to shell
Quantity:	15
Geometry:	Rectangular silhouette @ 450 mm (17.7 in.) wide by 900 mm (35.4 in.) long Supports oriented parallel to width, outer edges offset 220 mm (8.661 in.) from outer edges of shell

Test Specimen (continued)

Geometry:	Logarithmically varying depth profile, 30 mm (1.181 in.) wide plateau at panel centerline Flat face on one end; swept face on opposite end
Depth:	Minimum at edges @ 20 mm (0.787 in.) Maximum at plateau @ 67 mm (2.633 in.)
Overall Weight:	17.12 kg (37.75 lbs)
Installation:	Felt veneer exposed to sound field Twelve (12) panels arranged in matched pairs, mated along length in opposite orientation Matched pairs arranged in 2x3 grid, such that each pair is perpendicular to the pairs butted to its edges Remaining three (3) panels butted to edges of grid and to each other

Overall Specimen Properties

Size:	2.25 m (88.687 in) wide by 2.7 m (106.375 in) long
Thickness:	0.07 m (2.633 in)
Weight:	17.12 kg (37.75 lbs)
Mass per Unit Area:	2.81 kg/m² (0.58 lbs/ft²)
Calculation Area:	6.086 m² (65.51 ft²)

Test Environment

Room Volume:	291.98 m³
Temperature:	21.0 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity:	61.3 % ± 1.2 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure:	99.2 kPa (Requirement not defined)

MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Per sponsor request, the perimeter edges were left exposed, as would be typical of a field installation of the product under test.

Figure 1 – Specimen mounted in test chamber

Figure 2 – Individual specimen panel; faces oriented away from (left) and toward (right) horizontal test surface

Figure 3 – Detail of felt shell and veneer material

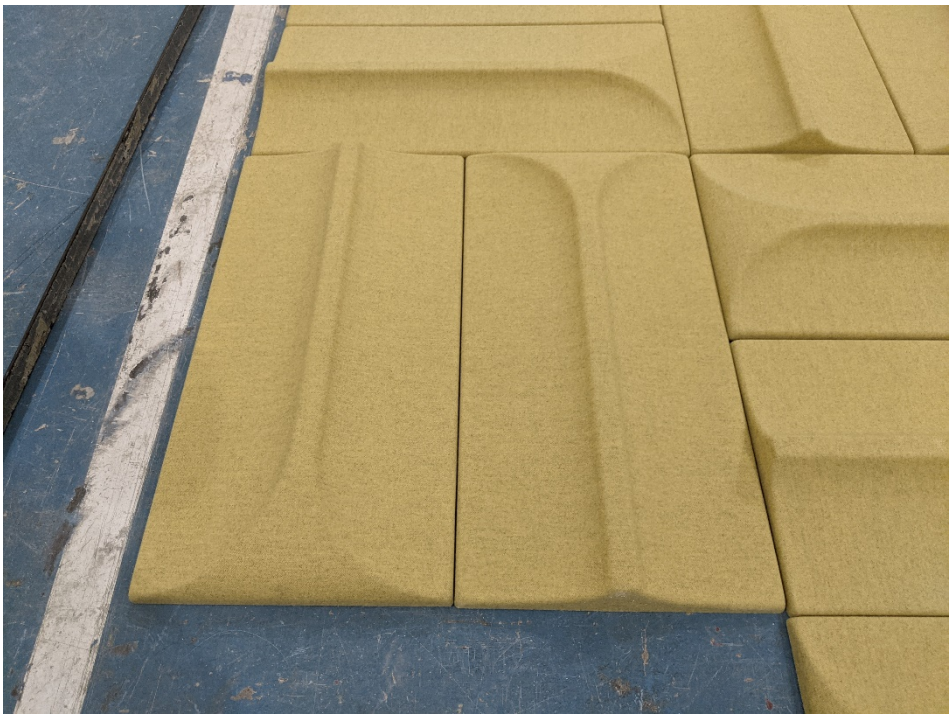

Figure 4 – Detail of matched pair configuration, flat and swept geometry at ends of panels

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	-0.17	-1.78	-0.03
** 125	0.37	3.99	0.06
160	1.28	13.75	0.21
200	1.72	18.57	0.28
** 250	2.66	28.69	0.44
315	4.06	43.65	0.67
400	4.27	46.01	0.70
** 500	4.01	43.14	0.66
630	4.01	43.19	0.66
800	4.21	45.28	0.69
** 1000	4.59	49.41	0.75
1250	4.60	49.49	0.76
1600	4.73	50.90	0.78
** 2000	4.82	51.84	0.79
2500	5.02	54.05	0.83
3150	4.99	53.71	0.82
** 4000	5.25	56.51	0.86
5000	5.44	58.51	0.89

SAA = 0.67
NRC = 0.65

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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

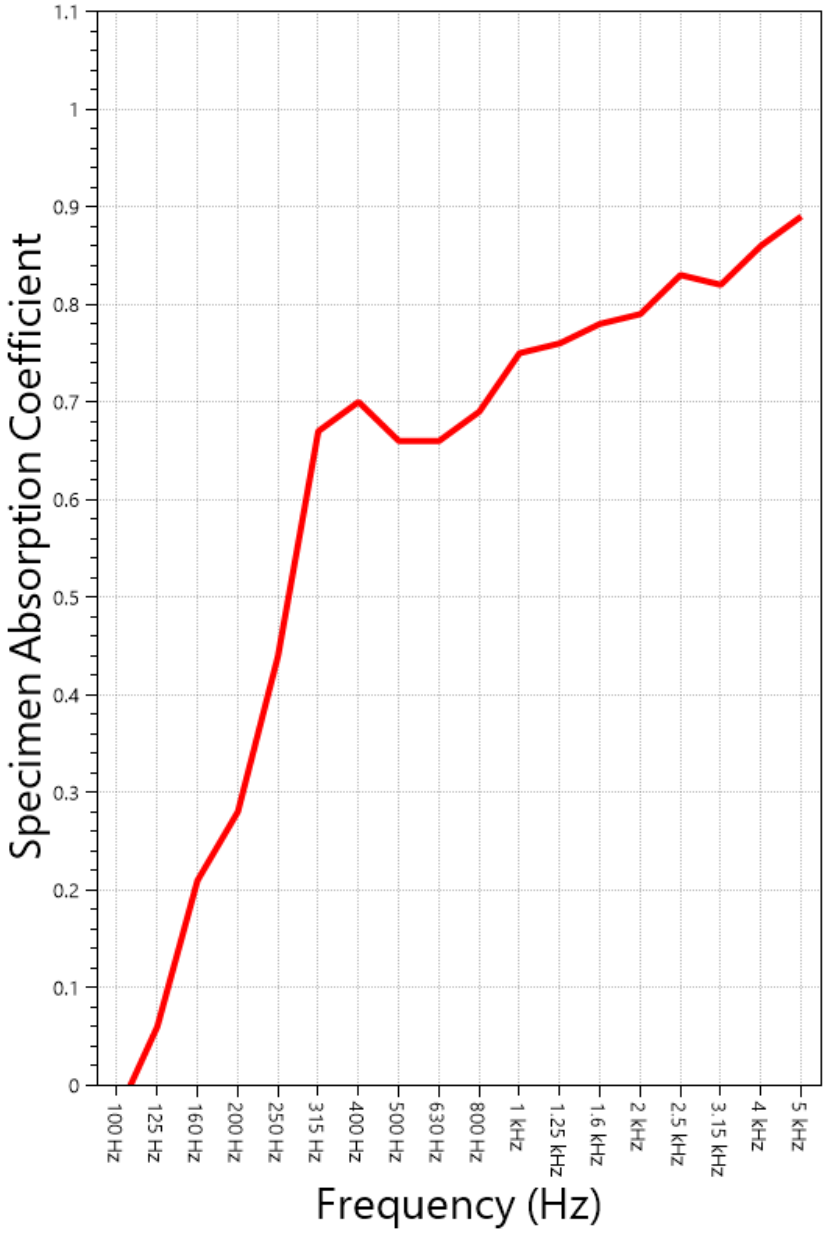
Report by _____
Malcolm Kelly
Acoustical Test Engineer

Approved by _____
Eric P. Wolfram
Laboratory Manager

Digitally signed by Eric P Wolfram
Date: 2021.03.16 15:01:15 -05'00'

SOUND ABSORPTION REPORT

Arc panels



SAA = 0.67
NRC = 0.65

APPENDIX A: Extended Frequency Range Data

Specimen: Arc panels (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	-3.25	-0.05
40	5.03	0.08
50	-1.87	-0.03
63	-2.19	-0.03
80	4.89	0.07
100	-1.78	-0.03
125	3.99	0.06
160	13.75	0.21
200	18.57	0.28
250	28.69	0.44
315	43.65	0.67
400	46.01	0.70
500	43.14	0.66
630	43.19	0.66
800	45.28	0.69
1000	49.41	0.75
1250	49.49	0.76
1600	50.90	0.78
2000	51.84	0.79
2500	54.05	0.83
3150	53.71	0.82
4000	56.51	0.86
5000	58.51	0.89
6300	62.18	0.95
8000	71.25	1.09
10000	82.72	1.26
12500	98.82	1.51

APPENDIX B: Instruments of Traceability

Specimen: Arc panels (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 1	Type 3160-A-042	3160-106968	2020-06-26	2021-06-26
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2020-09-30	2021-09-30
Bruel & Kjaer Pistonphone	Type 4228	2781248	2020-08-12	2021-08-12
EXTECH Hygro 639	SD700	A.103639	2020-12-18	2021-12-18

APPENDIX C: Revisions to Original Test Report

Specimen: Arc panels (See Full Report)

Date	Revision
2021-03-09	Original report issued

END