

Spool Acoustic Performance Report

- SPONSOR: RBW Sound Absorption
- CONDUCTED: 2024-10-04
- RAL™-A24-403
- ON: RBW Spool (4 units, 2 rows of 2 units each, rows spaced 80" o.c., units in each row spaced 80" o.c.)

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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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

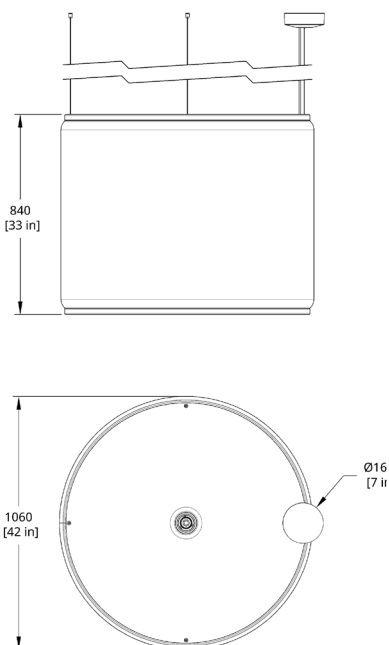
The test specimen was designated by the sponsor as RBW Spool (4 units, 2 rows of 2 units each, rows spaced 80" o.c., units in each row spaced 80" o.c.) The following nominal product information was provided by the sponsor prior to testing. The accuracy of such sponsor-provided information can affect the validity of the test results.

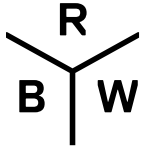
SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Product Type: Cylindrical Baffles
Diameter: 1035 mm (40.75 in.)
Depth: 826 mm (32.5 in.)
Overall Weight: 64.18 kg (141.5 lbs)





Physical Measurements (per object)

Dimensions: 1.04 m (40.75 in) wide by 1.04 m (40.75 in) long
Thickness: 0.83 m (32.5 in)
Weight: 16.05 kg (35.37 lbs)

Test Environment

Room Volume: 291.98 m³
Temperature: 22.0 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 57.8 % ± 0.4 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 99.5 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 4.37 m² (47.0 ft²).
The total exposed surface area of all sound-absorbing objects was 17.5 m² (188 ft²).

MOUNTING METHOD

Type JH-MOD Mounting: The specimen is an array of 4 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 1168 mm (46 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in two rows of two objects each, with rows spaced 2032 mm (80 in.) on center, and objects in each row spaced 2032 mm (80 in.) on center. The width of the installed object array was 3048 mm (120 in.) and the length of the installed object array was 3048 mm (120 in.) The area of extended continuous surface attributed to the object array was 16.4 m² (176 ft²).

TEST RESULTS

The preferred presentation of sound absorption test results for arrays of spaced objects is sound absorption (m²) per object and total sound absorption (m²) at each one-third-octave band

ASTM C423-23 Appendix X2 allows calculation of sound absorption per m² (SA/m²) based on the projected horizontal surface area attributable to an array of objects. The extended continuous surface area used in this calculation is to be determined using the following procedure:

$S_{array} = (W + W_1) \times (1 + I_1)$ If the set of objects consists of a rectangular array of equal sized objects with equal space between each object in a row and equal space between rows. (ASTM E423-23 X.2.3.1)

Where:

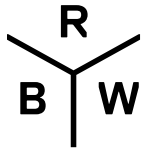
S_{array} = area of extended continuous surface attributed to the test specimen, m²

W = the measured width of the installed object array, in meters

W_1 = the space between objects in the array along the width, in meters

I = the measured length of the installed object array, in meters

I_1 = the space between objects in the array along the length, in meters



The sound absorption per m² (SA/m²) is calculated based on the following formula:

$$\alpha_{array} = (A_2 - A_1) / S_{array}$$

Where:

α_{array} = sound absorption per m² (SA/m²) of extended continuous surface, no units,

A_1 = absorption of the empty reverberation room, m² and

A_2 = absorption of the room after the specimen has been installed, m².

S_{array} = area of extended continuous surface attributed to the test specimen, m².

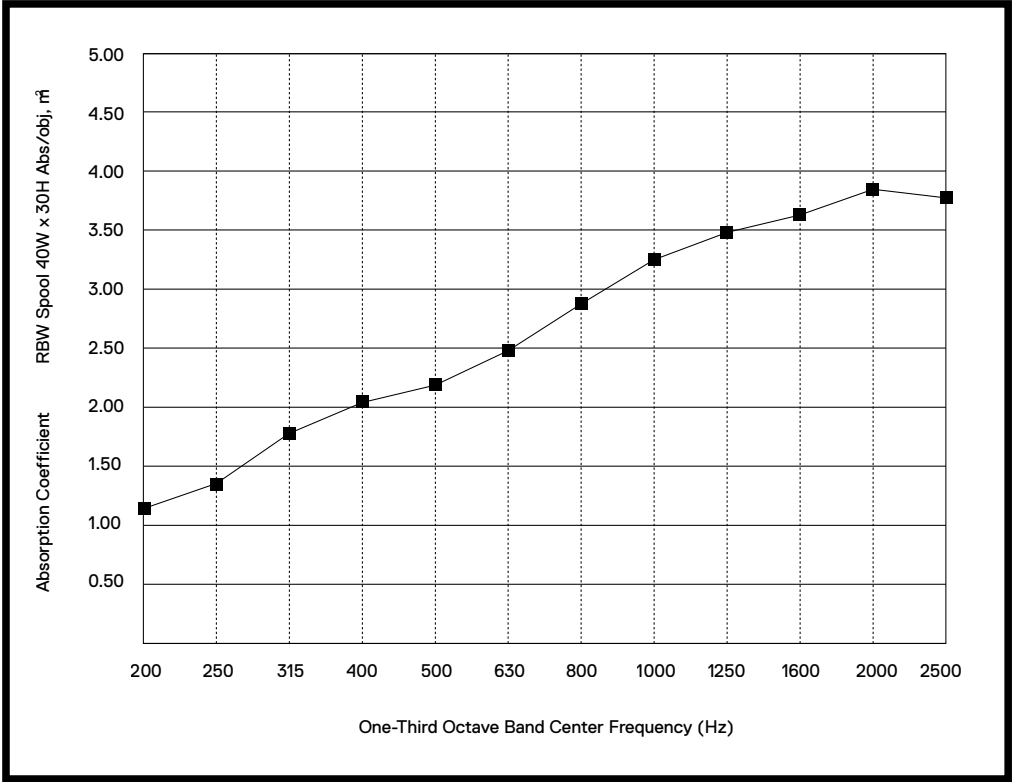
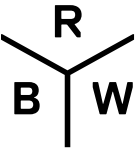
1/3 Octave Center Frequency	Total Absorption		Absorption per Object		α_{array}
	(Hz)	(m ²)	(Sabins)	(m ² / Object) (Sabins / Object)	(Sabins/ft ²) (SA/m ²)
100	5.42	58.35	1.36	14.59	0.33
**125	5.57	59.94	1.39	14.98	0.34
160	4.73	50.93	1.18	12.73	0.29
200	4.65	50.03	1.16	12.51	0.28
**250	5.46	58.76	1.36	14.69	0.33
315	7.20	77.54	1.80	19.39	0.44
400	8.23	88.60	2.06	22.15	0.50
**500	8.79	94.64	2.20	23.66	0.54
630	10.02	107.82	2.50	26.96	0.61
800	11.52	124.03	2.88	31.01	0.70
**1000	13.03	140.24	3.26	35.06	0.80
1250	13.92	149.81	3.48	37.45	0.85
1600	14.54	156.47	3.63	39.12	0.89
**2000	15.43	166.12	3.86	41.53	0.94
2500	15.16	163.16	3.79	40.79	0.93
3150	14.71	158.32	3.68	39.58	0.90
**4000	13.96	150.26	3.49	37.57	0.85
5000	13.65	146.89	3.41	36.72	0.83

Note: Sound absorption per m² (SA/m²), and therefore the reported Single Number Ratings, are highly dependent on the exact sample shape, size, spacing, and extended continuous surface area present in the test and subsequent calculations. Changes to any of these parameters will change the resulting values. These presented results are valid only for the specific configuration present in this test.

*Presented test results are sourced from Riverbank Acoustical Laboratories test number A24-403, which is available upon request."

Array-NRC 0.65 over 16.4 m² of extended continuous surface area

Array-SAA 0.65 over 16.4 m² of extended continuous surface area



APPENDIX A: Extended Frequency Range Data

Specimen: RBW Spool (4 units, 2 rows of 2 units each, rows spaced 80" o.c., units in each row spaced 80" o.c.) (See Full Report)

The following non-accredited data were obtained in accordance with ASTM C423-23, 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.

APPENDIX B: Instruments of Traceability

Specimen: RBW Spool (4 units, 2 rows of 2 units each, rows spaced 80" o.c., units in each row spaced 80" o.c.) (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 1	Type 3160-A-042	3160-106974	2024-08-15	2025-08-15
Brüel & Kjær Mic And Preamp G	Type 4943-B-001	2525858	2024-05-07	2025-05-07
Brüel & Kjær Pistonphone	Type 4228	2781248	2024-07-19	2025-07-19
EXTECH Hygro 959	SD700	A099959	2024-03-29	2025-03-29



APPENDIX C: Revisions to Original Test Report

Specimen: RBW Spool (4 units, 2 rows of 2 units each, rows spaced 80" o.c., units in each row spaced 80" o.c.) (See Full Report)

Date: 2024-10-07
Revision: Original report issued