

TEST REPORT

SPONSOR: RIVERBANK ACOUSTICAL LABORATORIES | GENEVA, IL



PRODUCT NAME:

VENTED PRESSED PAPER PULP EGG CARTONS – TRAY ONLY, INVERTED

TEST DATE:

MARCH 28, 2023

TEST METHOD:

ASTM C423-22

STANDARD TEST METHOD FOR SOUND ABSORPTION AND SOUND ABSORPTION
COEFFICIENTS BY THE REVERBERATION ROOM METHOD

RATING:

NRC= 0.50

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

Test Report

www.riverbankacoustics.com

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WALLACE CLEMENT SABINE

SPONSOR: **Riverbank Acoustical Laboratories**
Geneva, IL

Sound Absorption
RAL™-A23-071

CONDUCTED: 2023-03-28

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ON: Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted

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 C423-22: "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 Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted. 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

Product Name: Vented Pressed Paper Pulp Egg Cartons
Materials: 100% Reclaimed paper
Nominal Dimensions: 12" long by 4.25" wide by 2.75" high

SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Material: egg cartoons (12 egg capacity) with lids removed
Dimensions: 216 cartons @ 103 mm (4.0625 in.) by 298 mm (11.75 in.)
Depth: 52.39 mm (2.0625 in.)
Overall Weight: 7.94 kg (17.5 lbs)

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Overall Specimen Properties

Size: 2.49 m (98.0 in) wide by 2.69 m (106.0 in) long
Thickness: 0.05 m (2.0625 in)
Weight: 7.94 kg (17.5 lbs)
Mass per Unit Area: 1.18 kg/m² (0.24 lbs/ft²)
Calculation Area: 6.702 m² (72.14 ft²)

Test Environment

Room Volume: 291.98 m³
Temperature: 19.9 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)
Relative Humidity: 59.25 % ± 3.1 % (Requirement: ≥ 40 % and ≤ 5 % change)
Barometric Pressure: 99.7 kPa (Requirement not defined)

MOUNTING METHOD

Type A Mounting: The test specimen was an array of egg cartons. The test specimen was laid directly against the test surface. The specimen egg cartons were placed upside down. The carton lids were removed, leaving the carton bottoms attached to the flaps that were previously connecting the carton lids and bottoms. These flaps were extended out from each carton, and tucked underneath the next carton in the specimen array. The perimeter edges were left exposed to replicate a typical field installation.

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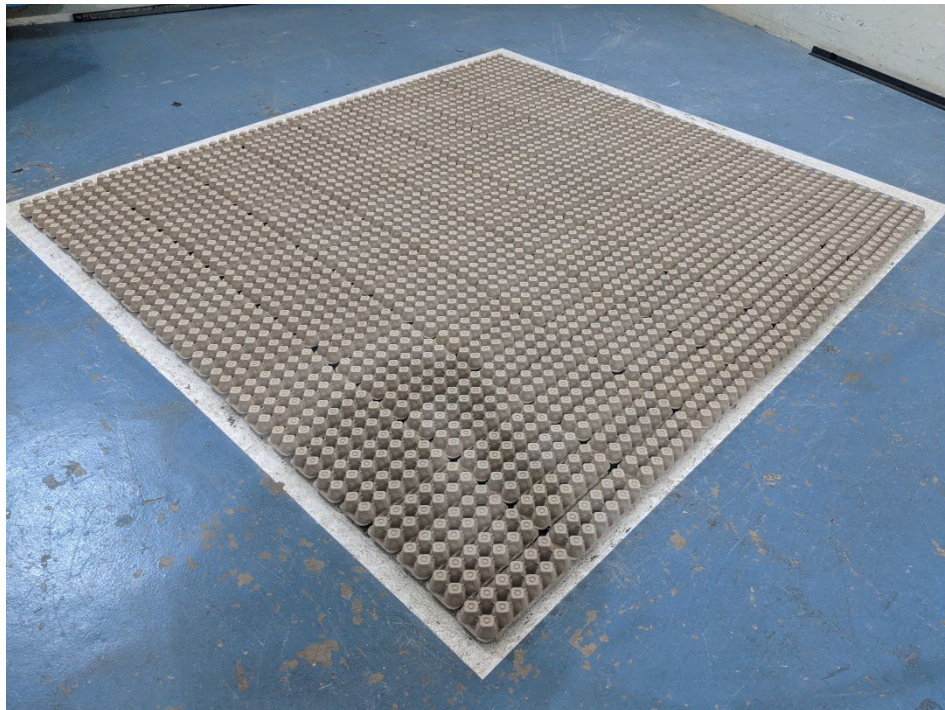


Figure 1 – Specimen mounted in test chamber



Figure 2 – Individual specimen egg carton, lid removed.

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Figure 3 – Specimen partially installed in test chamber. Note that carton flaps are tucked under adjacent cartons.

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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	-0.01	-0.07	0.00
** 125	-0.22	-2.40	-0.03
160	0.21	2.29	0.03
200	0.43	4.65	0.06
** 250	0.43	4.63	0.06
315	1.02	10.98	0.15
400	1.65	17.73	0.25
** 500	3.58	38.56	0.53
630	5.76	62.02	0.86
800	5.35	57.63	0.80
** 1000	4.38	47.12	0.65
1250	3.52	37.84	0.52
1600	3.96	42.68	0.59
** 2000	4.65	50.02	0.69
2500	4.87	52.43	0.73
3150	5.04	54.29	0.75
** 4000	4.71	50.65	0.70
5000	4.66	50.12	0.69

SAA = 0.49
NRC = 0.50

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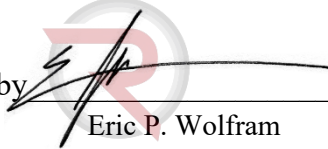
TEST RESULTS (continued)

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 
Keith Kimberling
Test Engineer

Approved by 
Eric P. Wolfram
Laboratory Manager

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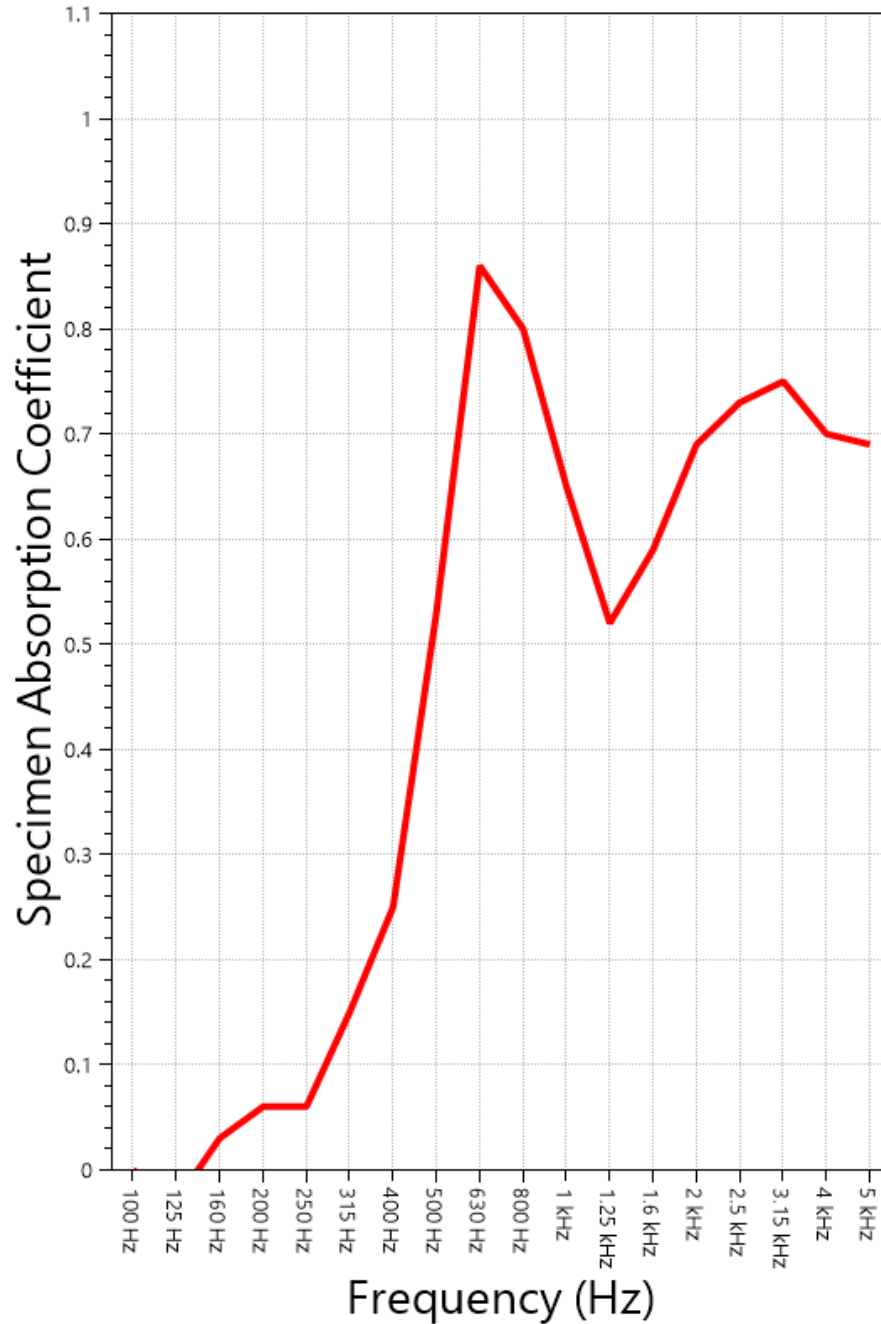
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SOUND ABSORPTION REPORT

Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted



SAA = 0.49

NRC = 0.50



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APPENDIX A: Extended Frequency Range Data

Specimen: Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted (See Full Report)

The following non-accredited data were obtained in accordance with ASTM C423-22, 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	-6.00	-0.08
40	-1.08	-0.01
50	1.27	0.02
63	-9.63	-0.13
80	7.60	0.11
100	-0.07	0.00
125	-2.40	-0.03
160	2.29	0.03
200	4.65	0.06
250	4.63	0.06
315	10.98	0.15
400	17.73	0.25
500	38.56	0.53
630	62.02	0.86
800	57.63	0.80
1000	47.12	0.65
1250	37.84	0.52
1600	42.68	0.59
2000	50.02	0.69
2500	52.43	0.73
3150	54.29	0.75
4000	50.65	0.70
5000	50.12	0.69
6300	49.63	0.69
8000	44.12	0.61
10000	37.47	0.52
12500	44.64	0.62



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APPENDIX B: Instruments of Traceability

Specimen: Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted (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	2022-07-12	2023-07-12
Bruel & Kjaer Mic And Preamp D	Type 4943-B-001	2311440	2022-09-28	2023-09-28
Bruel & Kjaer Pistonphone	Type 4228	2781248	2022-07-22	2023-07-22
EXTECH Hygro 639	SD700	A.103639	2022-12-07	2023-12-07

APPENDIX C: Revisions to Original Test Report

Specimen: Vented Pressed Paper Pulp Egg Cartons - Tray Only, Inverted (See Full Report)

<u>Date</u>	<u>Revision</u>
2023-03-30	Original report issued

END