627 RIVERBANK DRIVE
GENEVA, IL 60134

630-232-0104

Test Report

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FOUNDED 1918 BY
WALLACE CLEMENT SABINE

SPONSOR: **Moxie Surfaces**
Encinitas, CA

Sound Transmission Loss
RAL™-TL24-127

CONDUCTED: 2024-03-22

ON: AIR-board Acoustic Quiet – 3/4”

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 E90-09 (2016): "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements." The single number rating of the specimen was calculated according to ASTM E413-22: "Classification for Rating Sound Insulation." A description of the measurement procedure and room specifications is available upon request. The transmission loss values are for a single direction of measurement. 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 AIR-board Acoustic Quiet – 3/4”. 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:	AIR-board Acoustic Quiet – 3/4”
Manufacturer:	Design Composite
US Distributor:	Moxie Surfaces

SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

Test Specimen

Material:	Panel with honeycomb core, microperforated sheet on one side, solid sheet on other side
Dimensions:	1219 mm (48 in.) by 2438 mm (96 in.)
Thickness:	20.13 mm (0.7925 in.)
Overall Weight:	14.17 kg (31.25 lbs)

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Overall Specimen Measurements

Dimensions:	1.22 m (48.0 in) wide by 2.44 m (96.0 in) high
Thickness:	0.02 m (0.7925 in)
Weight:	14.17 kg (31.25 lbs)
Overall Area:	2.973 m² (32. ft²)
Mass per Unit Area:	4.77 kg/m² (0.98 lbs/ft²)

Test Aperture

Opening Size:	1.22 m (4.0 ft.) by 2.44 m (8.0 ft.)
Filler Wall:	None
Aperture Size:	1.22 m (48.0 in) wide by 2.44 m (96.0 in) high
Transmission Area:	2.973 m² (32. ft²)
Sealed:	Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume:	178.33 m³
Temperature:	22.2 °C ± 0.0 °C
Relative Humidity:	50.5 % ± 1.0 %

Receive Room

Volume:	131.43 m³
Temperature:	23.1 °C ± 0.6 °C
Relative Humidity:	51.0 % ± 2.0 %

Requirements

Temperature:	22º C +/- 2° C, not more than 3° C change over all tests.
Relative Humidity:	≥ 30%, not more than +/- 3% change over all tests.

Figure 1 – Specimen mounted in test aperture, as viewed from source room (left) and receive room (right)

Figure 2 – Test specimen prior to installation

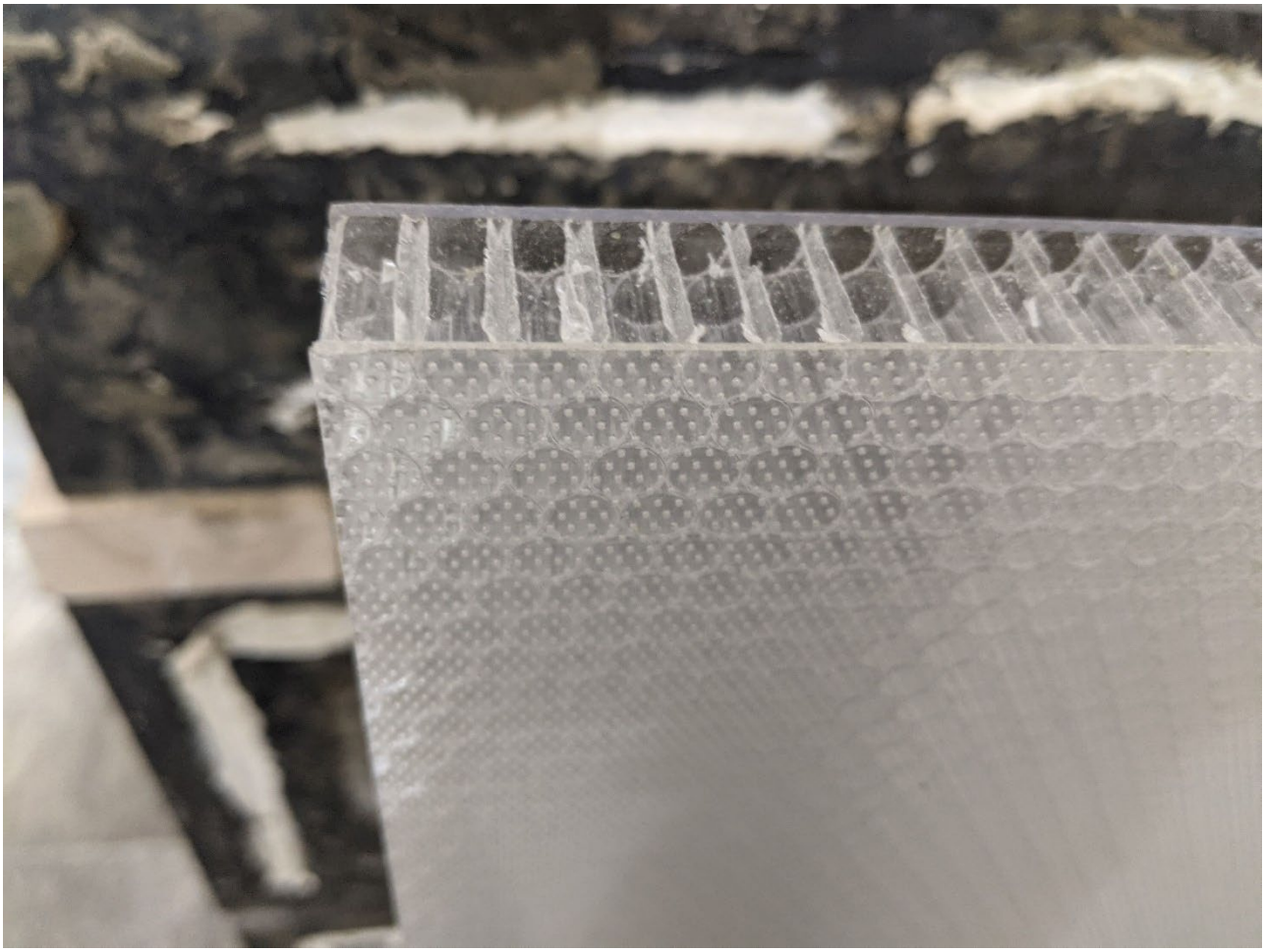

Figure 3 – Detail of test specimen materials

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TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequency bands. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09 (2016). See Appendix A for identification of corrections applied to the reported data.

FREQ.	TL	ΔTL	DEF.	FREQ.	TL	ΔTL	DEF.
100	21	0.54	0	800	24	0.20	4
125	14	0.89	0	1000	26	0.19	3
160	14	0.95	0	1250	29	0.12	1
200	15	0.46	1	1600	32	0.08	0
250	17	0.30	2	2000	35	0.09	0
315	18	0.32	4	2500	41	0.11	0
400	19	0.21	6	3150	47	0.07	0
500	21	0.13	5	4000	48	0.09	0
630	23	0.25	4	5000	43	0.09	0

STC=26

ABBREVIATION INDEX

FREQ. = 1/3 OCTAVE BAND CENTER FREQUENCY, Hz
TL = TRANSMISSION LOSS, dB
ΔTL = 95% CONFIDENCE INTERVAL FOR TL MEASUREMENTS, dB
DEF. = DEFICIENCIES, dB BELOW SHIFTED STC CONTOUR (SUM OF DEF = 30)
STC = SOUND TRANSMISSION CLASS

Tested by _____
Marc Sciaky
Senior Experimentalist

Report by _____
Keith Kimberling
Test Engineer

Approved by _____
Eric P. Wolfram
Laboratory Manager

Digitally signed by
Eric P Wolfram
Date: 2024.04.12
09:44:50 -05'00'

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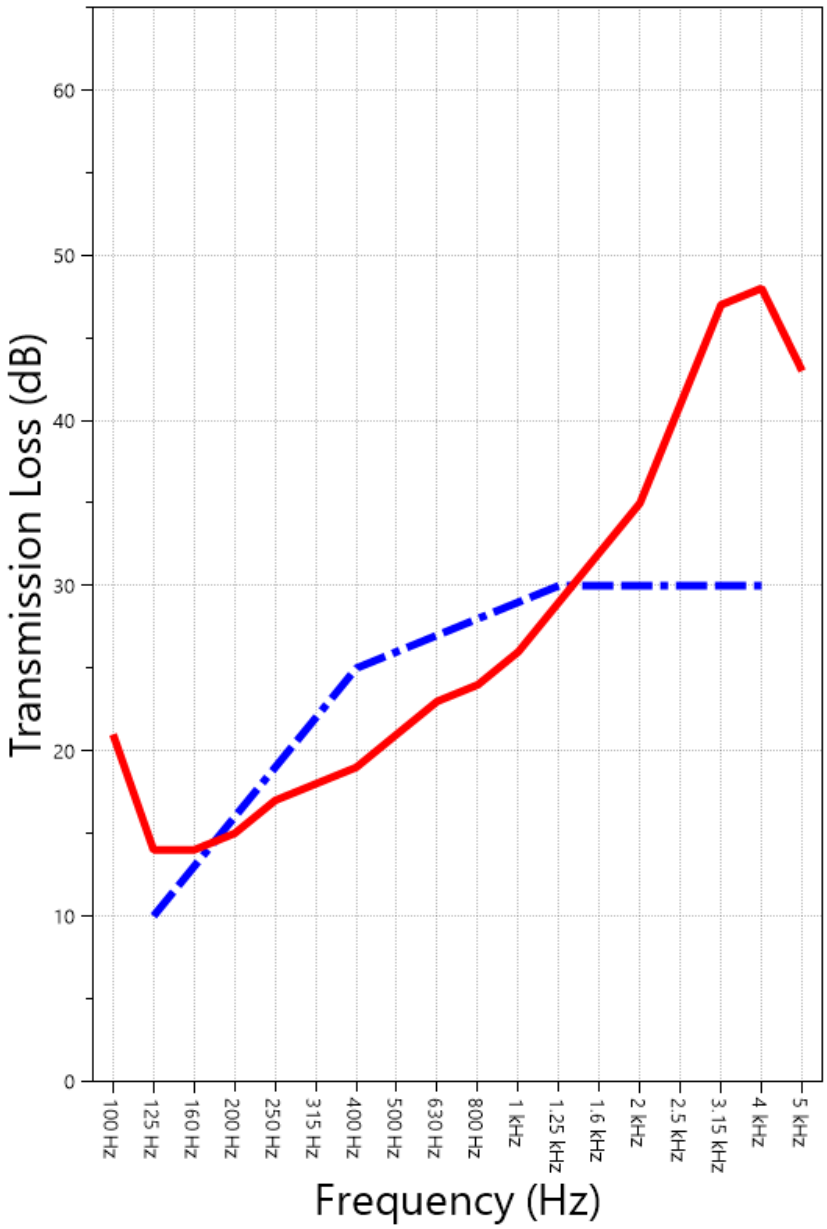
RAL™-TL24-127

SOUND TRANSMISSION REPORT

AIR-board Acoustic Quiet – 3/4”



STC=26
OITC=20

TRANSMISSION LOSS
SOUND TRANSMISSION CLASS CONTOUR

NVLAP TESTING
NVLAP LAB CODE 100227-0

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APPENDIX A: Extended Frequency Range Data

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

The following non-accredited data were obtained in accordance with ASTM E90-09 (2016), 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. Sampling precision observed during this procedure is reported below. Corrections are detailed in Appendix B.

1/3 Octave Band Center Frequency (Hz)	**Sound Transmission Loss** (dB)	**Applicable Corrections**	**ΔTL (Eq. A2.5)** (dB)	**Repeatability** (dB)
31.5	7		0.43	1.24
40	13		0.79	1.44
50	10		1.35	0.98
63	6		1.02	2.33
80	10		0.54	1.46
100	21		0.54	0.77
125	14		0.89	1.28
160	14		0.95	1.18
200	15		0.46	0.74
250	17		0.30	0.53
315	18		0.32	0.46
400	19		0.21	0.41
500	21		0.13	0.41
630	23		0.25	0.32
800	24		0.20	0.30
1000	26		0.19	0.29
1250	29		0.12	0.15
1600	32		0.08	0.18
2000	35		0.09	0.12
2500	41		0.11	0.28
3150	47		0.07	0.23
4000	48		0.09	0.18
5000	43		0.09	0.26
6300	42		0.06	0.28
8000	43		0.06	0.67
10000	31		0.10	0.93
12500	27		0.06	1.93

APPENDIX B: Glossary of Standardized Corrections and Adjustments

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

Mark	Interpretation
A	Measured sound pressure levels in the receive room are within 10 dB of the ambient noise level at the marked frequency band. Receive room levels used to calculate Transmission Loss are corrected according to ASTM E90 Section 10.3.
AA	Measured sound pressure levels in the receive room are within 5 dB of the ambient noise level at the marked frequency band. Receive room levels used to calculate Transmission Loss are corrected according to ASTM E90 Section 10.3.1. Transmission Loss values calculated from levels corrected this way will be less than or equal to Transmission Loss values from a hypothetical test using the same specimen and a receive room with idealized ambient sound levels of (-∞) dB.
F	The reported Transmission Loss is within 10 dB of the laboratory flanking limit at the marked frequency band. The measured performance of the specimen may be limited by the performance of the laboratory building structure at this frequency band.
Z	The reported Transmission Loss at the marked frequency band has been corrected according to ASTM E90 Section A3.2.7 to account for possible sound transmission through the filler assembly.
ZZ	The reported Transmission Loss at the marked frequency band has been corrected according to ASTM E90 Section A3.2.8 to account for possible sound transmission through the filler assembly. Transmission Loss values corrected this way will be less than or equal to Transmission Loss values from a hypothetical test using the same specimen and an idealized filler assembly with a Sound Transmission Class rating of (∞).

APPENDIX C: Glossary of Variability Metrics

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

ΔTL, the 95% confidence interval for reported transmission loss values, is calculated from the standard deviation of the sets of measurements for source room sound pressure level, receive room sound pressure level, and receive room sound absorption. This metric is calculated in an effort to quantify the combined influences of room geometry, microphone positioning, and other varying environmental conditions on reported results.

Repeatability, expressed as a 95% confidence interval, is calculated from the standard deviation of transmission loss as obtained from a set of six (6) consecutive tests conducted according to this test method by RAL on 2020-02-24. The tests were performed on a specimen composed of welded aluminum tubing, using the same test opening as used in this report. This metric provides an estimate of the variation in results that might be observed if the test were repeated with no change to the installed specimen. Note that repeatability will vary with the construction type.

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APPENDIX D: Determination of Outdoor Indoor Transmission Class (OITC)

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

The determination of the Outdoor Indoor Transmission Class (OITC) as reported below was made with explicit conformity to the procedures described in the ASTM E1332-22 test standard. Test Method ASTM E90-09 (2016) was used to obtain the sound transmission loss data. This rating is based on an average transportation noise source spectrum and an A-weighted sound level reduction, either of which may be inappropriate for some applications.

One-third Octave Band Center Frequency, Hz	Reference Sound Spectrum, dB	Test Specimen Transmission Loss, dB
80	103	10
100	102	21
125	101	14
160	98	14
200	97	15
250	95	17
315	94	18
400	93	19
500	93	21
630	91	23
800	90	24
1000	89	26
1250	89	29
1600	88	32
2000	88	35
2500	87	41
3150	85	47
4000	84	48

OITC = 20

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APPENDIX E: Instruments of Traceability

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
System 2	Type 3160-A-042	3160-106974	2023-08-11	2024-08-11
Bruel & Kjaer Mic And Preamp C	Type 4943-B-001	2311439	2023-03-23	2024-03-23
Bruel & Kjaer Pistonphone	Type 4228	2781248	2023-07-12	2024-07-12
EXTECH Hygro 959	SD700	A.099959	2023-03-24	2024-03-24
EXTECH Hygro 639	SD700	A.103639	2023-12-01	2024-12-01

APPENDIX F: Revisions to Original Test Report

Specimen: AIR-board Acoustic Quiet – 3/4" (See Full Report)

Date	Revision
2024-04-08	Original report issued

END