

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

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WALLACE CLEMENT SABINE

## Test Report

FOR: **ezoBord**  
Elgin, IL

**Sound Absorption**  
**RAL-A18-340**

CONDUCTED: 2018-10-05

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ON: Workzone Divider 3/8 in. (9 mm)

### TEST METHOD

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 17025:2005 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 measuring procedure and room qualifications is available upon request.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Workzone Divider 3/8 in. (9 mm). A full internal inspection performed on the test specimen by Riverbank personnel verified the manufacturer's description.

### Test Specimen

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Material: Polyethylene terephthalate  
Dimensions: 2 @ 2406.65 mm (94.75 in.) x 1206.5 mm (47.5 in.)  
Thickness: 9.37 mm (0.369 in.)  
Holes: Total of 60 circular holes distributed around panel area  
30 holes @ 47.62 mm (1.875 in.) diameter  
22 holes @ 66.68 mm (2.625 in.) diameter  
8 holes @ 114.3 mm (4.5 in.) diameter  
Overall Weight: 7.03 kg (15.5 lbs)

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### Physical Measures

Array Dimensions: 2.57 m (101.0 in) wide by 2.41 m (94.75 in) long  
Thickness: 0.01 m (0.369 in)  
Weight: 7.03 kg (15.5 lbs)

### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 20.7 °C ± 0.0 °C  
Relative Humidity: 62.85 % ± 0.1 %  
Barometric Pressure: 98.7 kPa

Each sound absorbing unit had an absorptive area (all exposed surfaces) of 5.87 m<sup>2</sup> (63.24 ft<sup>2</sup>). The total absorptive area (all exposed surfaces) of all sound-absorbing units was 11.75 m<sup>2</sup> (126.47 ft<sup>2</sup>). The array of units covered 6.17 m<sup>2</sup> (66.46 ft<sup>2</sup>) of vertical surface area.

### MOUNTING METHOD

Type J Mounting: The specimen is a coplanar array of two (2) sound absorbing units spaced 152.4 mm (6 in.) apart. The units rested directly against the test chamber floor and were steadied with a single cable mounted to the test chamber walls. This installation approximates the intended field installation of the product.

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Figure 1 - Specimen mounted in test chamber



Figure 2 - Detail of the test specimen

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TEST RESULTS

Note: There is currently no standardized method for calculating Absorption Coefficients from spaced object absorbers. The sound absorption performance of spaced object absorbers should not be compared directly with specimens tested as a single rectangular area (e.g. mounting types A, E, etc.).

1/3 Octave Center Frequency (Hz)	Total Absorption		Absorption per Unit	
	(m <sup>2</sup> )	(Sabins)	(m <sup>2</sup> / Unit)	(Sabins / Unit)
100	2.23	23.99	1.11	12.00
** 125	2.96	31.86	1.48	15.93
160	2.08	22.35	1.04	11.18
200	2.76	29.70	1.38	14.85
** 250	2.66	28.68	1.33	14.34
315	2.96	31.87	1.48	15.94
400	2.99	32.14	1.49	16.07
** 500	3.27	35.24	1.64	17.62
630	3.52	37.93	1.76	18.97
800	3.84	41.39	1.92	20.70
** 1000	4.28	46.08	2.14	23.04
1250	4.64	49.95	2.32	24.98
1600	5.20	55.94	2.60	27.97
** 2000	5.54	59.69	2.77	29.85
2500	5.83	62.73	2.91	31.37
3150	6.23	67.05	3.11	33.53
** 4000	6.47	69.65	3.24	34.83
5000	6.60	70.99	3.30	35.50

Tested by   
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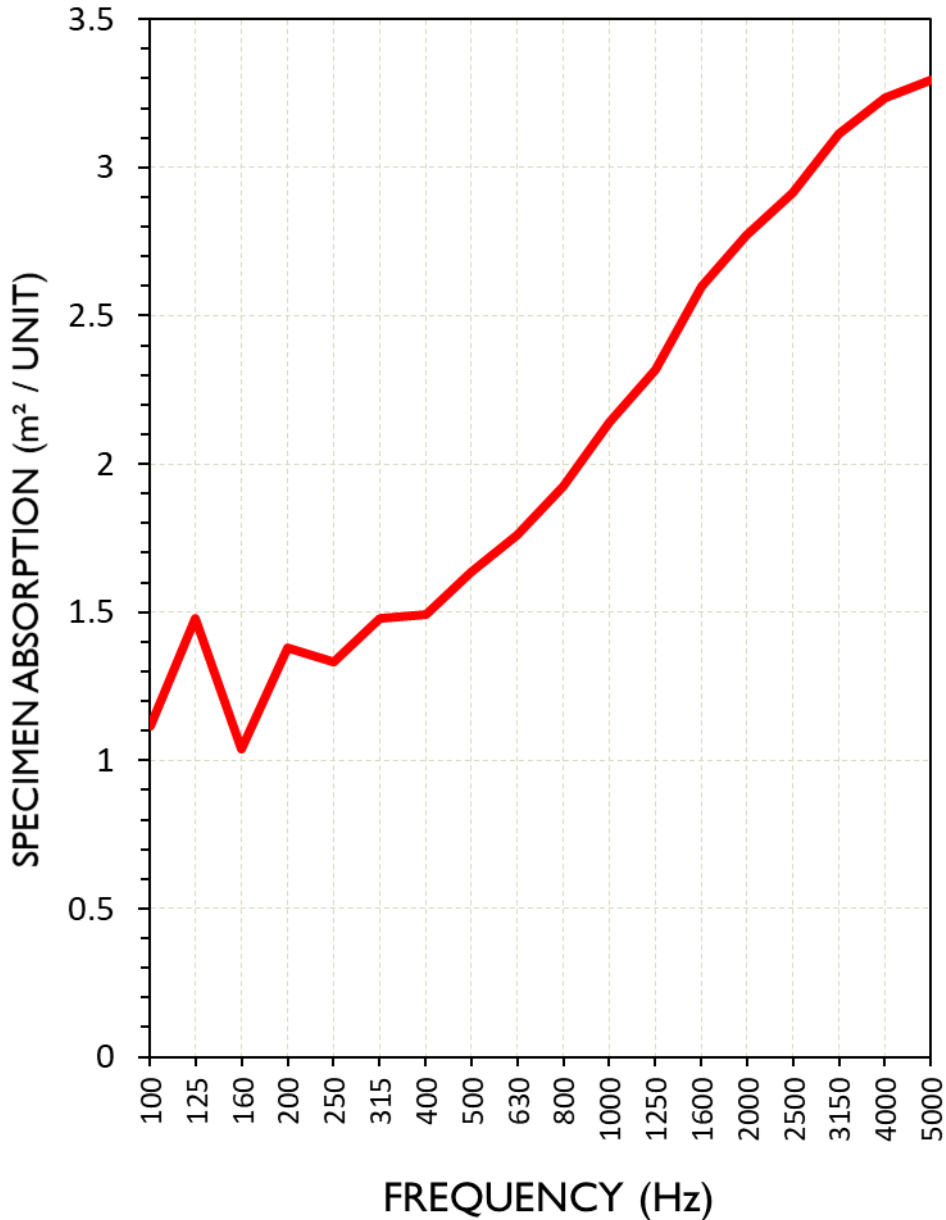
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SOUND ABSORPTION REPORT  
Workzone Divider 3/8 in. (9 mm)



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**APPENDIX A: Extended Frequency Range Data**

Specimen: Workzone Divider 3/8 in. (9 mm) (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		Absorption per Unit	
	(m <sup>2</sup> )	(Sabins)	(m <sup>2</sup> / Unit)	(Sabins / Unit)
31.5	-0.18	-1.93	-0.09	-0.97
40	0.44	4.73	0.22	2.37
50	0.80	8.63	0.40	4.32
63	0.22	2.33	0.11	1.17
80	2.05	22.04	1.02	11.02
100	2.23	23.99	1.11	12.00
125	2.96	31.86	1.48	15.93
160	2.08	22.35	1.04	11.18
200	2.76	29.70	1.38	14.85
250	2.66	28.68	1.33	14.34
315	2.96	31.87	1.48	15.94
400	2.99	32.14	1.49	16.07
500	3.27	35.24	1.64	17.62
630	3.52	37.93	1.76	18.97
800	3.84	41.39	1.92	20.70
1000	4.28	46.08	2.14	23.04
1250	4.64	49.95	2.32	24.98
1600	5.20	55.94	2.60	27.97
2000	5.54	59.69	2.77	29.85
2500	5.83	62.73	2.91	31.37
3150	6.23	67.05	3.11	33.53
4000	6.47	69.65	3.24	34.83
5000	6.60	70.99	3.30	35.50
6300	7.00	75.30	3.50	37.65
8000	7.31	78.63	3.65	39.32
10000	7.52	80.97	3.76	40.49
12500	7.89	84.90	3.94	42.45

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### APPENDIX B: Instruments of Traceability

Specimen: Workzone Divider 3/8 in. (9 mm) (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-4/2	System 1	2018-08-09	2019-08-09
Bruel & Kjaer Mic And Preamp C	Type 4943-B-001	2311439	2018-03-27	2019-03-27
Bruel & Kjaer Pistonphone	Type 4228	2781248	2018-08-06	2019-08-06
Omega Digital Temp., Humid. And Pressure Recorder	OM-CP-PRHTemp2000	P97844	2018-02-03	2019-02-03

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END



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ON: Workzone Divider 3/8 in. (9 mm) (See Full Test Report for Details)

### **Appendix C to ASTM C423 Sound Absorption Test**

Non-standard calculation of equivalent NRC Rating and Absorption Coefficients from spaced absorbers.

At this time ASTM C423 does not provide a standard method for determining absorption coefficients of spaced object absorbers. Tests of a set of sound absorbing objects spaced apart from each other will yield higher absorption rates than a specimen joined together as a single patch (A-Mount or E-Mount). For this reason it is unfair to provide NRC or absorption coefficient ratings for specimens that consist of a spaced set of absorbers. Despite this, the architectural industry has expressed great demand for a simple "single number" rating for these treatments. Likewise, acoustical consultants desire equivalent absorption coefficient data for use in acoustical modeling programs. The following is an attempt to appease these demands until ASTM develops a standard method for calculation. Several alternate non-standard calculation methods are provided. Riverbank Acoustical Laboratories prefers method 1.

#### **Method 1) Apparent Sound Absorption Coefficient calculated from total test surface area covered.**

The total sound absorption yielded by the specimen is divided by the total vertical surface area of the test surface covered by the suspended units, including intermediate spaces. The unit rigging covered 6.17 m<sup>2</sup> (66.46 ft<sup>2</sup>) of projected vertical test surface area. With an extra 152.4 mm (6 in.) of width for the space between these units and what would be the next unit in a larger array, the area comes to 6.54 m<sup>2</sup> (70.40 ft<sup>2</sup>) Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. In acoustical modeling applications, the apparent sound absorption coefficient data can be assigned to a single vertical plane for approximation of performance for larger arrays (assuming unit spacing is similar to that tested).

#### **Method 2) Apparent Sound Absorption Coefficient calculated from two faces per unit**

The total sound absorption yielded by the specimen is divided by the surface area of two faces per unit (5.81 m<sup>2</sup> (62.51 ft<sup>2</sup>) per unit x 2 units = 11.61 m<sup>2</sup> (125.02 ft<sup>2</sup>) total surface area). Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. This method is similar in motivation to the processes used for K-mount materials, but does not provide a fair comparison with materials mounted as a uniform patch (in A-mount or E-mount).

#### **Method 3) Apparent Sound Absorption Coefficient calculated from one face per unit.**

The total sound absorption yielded by the specimen is divided by the surface area of one side of one large face for each unit in the specimen (2.90 m<sup>2</sup> (31.25 ft<sup>2</sup>) per unit x 2 units = 5.81 m<sup>2</sup> (62.51 ft<sup>2</sup>) total surface area). Apparent Noise Reduction Coefficient (NRC) rating and Sound Absorption Average (SAA) figures are calculated from this data based on the methods described in ASTM C423-17. This method is favored by some material manufacturers since it yields very high NRC figures, but does not provide a fair comparison with other ceiling tile or wall panel products.



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**Appendix D: Data** Note: See full test report for details of mounting position, spacing and configuration as these parameters greatly affect sound absorption performance.

Specimen Absorption			Method 1	Method 2	Method 3
			Apparent Abs. Coefficient From Total Coverage Area	Apparent Abs. Coefficient From Two Faces/Unit	Apparent Abs. Coefficient From One Face/Unit
Freq. (Hz)	Sabins	Sabins / Unit			
31.5	-1.93	-0.97	-0.03	-0.02	-0.03
40	4.73	2.37	0.07	0.04	0.08
50	8.63	4.32	0.12	0.07	0.14
<b>63</b>	2.33	1.17	0.03	0.02	0.04
80	22.04	11.02	0.31	0.17	0.35
100	23.99	12.00	0.34	0.19	0.38
<b>125</b>	31.86	15.93	0.45	0.25	0.51
160	22.35	11.18	0.32	0.18	0.36
200	29.70	14.85	0.42	0.23	0.48
<b>250</b>	28.68	14.34	0.41	0.23	0.46
315	31.87	15.94	0.45	0.25	0.51
400	32.14	16.07	0.46	0.25	0.51
<b>500</b>	35.24	17.62	0.50	0.28	0.56
630	37.93	18.97	0.54	0.30	0.61
800	41.39	20.70	0.59	0.33	0.66
<b>1,000</b>	46.08	23.04	0.65	0.36	0.74
1,250	49.95	24.98	0.71	0.39	0.80
1,600	55.94	27.97	0.80	0.44	0.90
<b>2,000</b>	59.69	29.85	0.85	0.47	0.95
2,500	62.73	31.37	0.89	0.50	1.00
3,150	67.05	33.53	0.95	0.53	1.07
<b>4,000</b>	69.65	34.83	0.99	0.55	1.11
5,000	70.99	35.50	1.01	0.56	1.14
6,300	75.30	37.65	1.07	0.60	1.21
<b>8,000</b>	78.63	39.32	1.12	0.62	1.26
10,000	80.97	40.49	1.15	0.64	1.29
12,500	84.90	42.45	1.21	0.67	1.36
<b>Apparent NRC:</b>			<b>0.60</b>	<b>0.35</b>	<b>0.70</b>
<b>Apparent SAA:</b>			<b>0.61</b>	<b>0.34</b>	<b>0.68</b>

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