



Title: Sound Absorption Test Results

Product: Silk Metal with 1" Fiberglass Insulation

Application: Wall or Ceiling

Testing Standard: ASTM C423 A-Mount

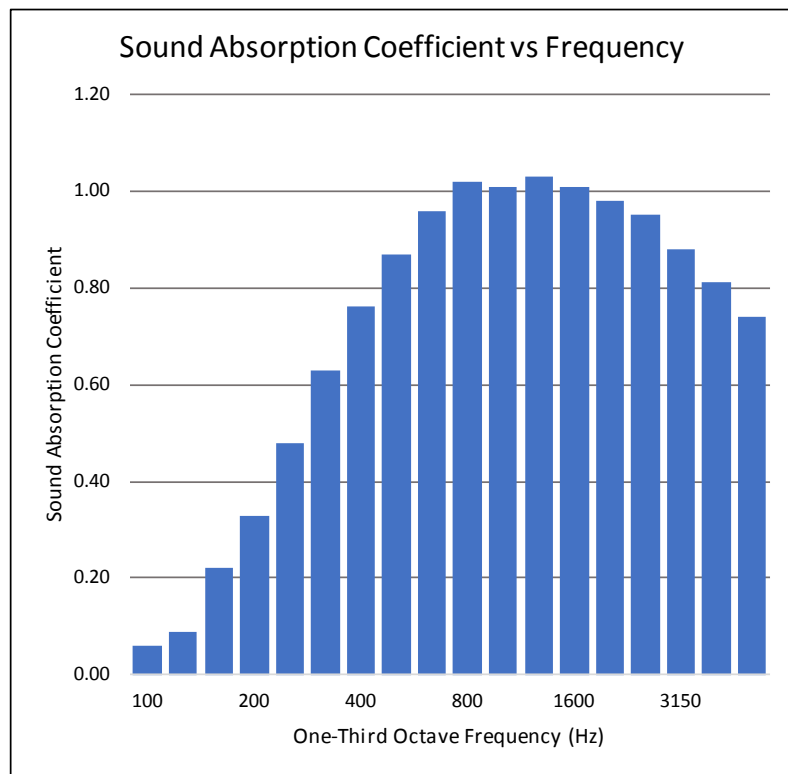
Test Date: 12/09/2010

Why this test: This test evaluates a products efficiency of absorbing sound at multiple frequencies. The test simulates the product's acoustical performance with a direct installation on a wall or ceiling.

Test Result Summary: NRC - 0.85; SAA - 0.84

NRC	SAA
0.85	0.84

Frequency (Hz)	Absorption Coefficient
100	0.06
125	0.09
160	0.22
200	0.33
250	0.48
315	0.63
400	0.76
500	0.87
630	0.96
800	1.02
1000	1.01
1250	1.03
1600	1.01
2000	0.98
2500	0.95
3150	0.88
4000	0.81
5000	0.74



Test ID: 93638

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**Acoustic and Insulation
Product Testing Laboratories**

2790 Columbus Road, Granville, OH 43023

CLIENT: Alfonso E. Perez
CDC Corporation
800 Gustafson Road
Ladysmith, WI 54848

REPORT NO. 93638
Proposal No. N/A
Date: 9 December 2010

TITLE: Sound Absorption Testing per ASTM C423-09a and E795-05.

Purpose

The purpose of this testing is to determine the sound absorptive properties of the submitted sample.

Samples Submitted

The test material description, whether by observation or as provided by the client is as follows: Silk Metal Unit Absorbers - With Infill of 1" Fiberglass Core

Testing Method

All samples were placed in the designated ASTM C423 position within the 286.36 cubic meter reverberation chamber. All samples were mounted in accordance with ASTM E795 Type A Mount requirements. An aluminum frame was used to seal the perimeter edge of each sample.

The test method conformed explicitly to the requirements of the ASTM Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method: ASTM C423-09a and E795-05. The Owens Corning Test Method M-01Aa conforms explicitly to ASTM and NVLAP requirements and describes in detail the method used by this lab in conducting sound absorption tests. A description of the



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The information provided herein is based on controlled laboratory conditions. The test specimen identification is as provided by the client and Owens Corning Acoustic and Insulation Product Testing Laboratories accepts no responsibility for any inaccuracies therein. Owens Corning Acoustic and Insulation Product Testing Laboratories makes no warranty that the results provided herein are representative of actual use conditions. Each user should independently evaluate the data provided and make their own decision as to whether the data is reliable and representative for their service conditions.

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measuring technique is available separately. Details pertaining to Reverberation Suite 1 are available upon request.

Accuracy and Accreditation

Owens Corning Acoustic and Insulation Product Testing Laboratories have been accredited by the U.S. Department of Commerce, as administered through the National Institute of Standards and Technology (NIST), under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure. The percentage of uncertainty for the required 95% confidence limits is outlined per frequency band in section 13 of the ASTM Standard Test Method for Sound Absorption Coefficients by the Reverberation Room Method: ASTM C423. Tables 1 and 2 show the reproducibility (R) and repeatability (r) of an inter-laboratory comparison beginning in 2001.

Summary of Results

Summations and details of the test(s) and test results are provided on the attached data sheet(s).

Signature on File

Crystal Young
Technician, Acoustic Research Center
Owens Corning Acoustic and Insulation
Product Testing Laboratories

Signature on File

David Burd
Lab Lead, Acoustic Research Center
Owens Corning Acoustic and Insulation
Product Testing Laboratories



**Acoustic and Insulation
Product Testing Laboratories**

Test Number C423_100112

ASTM C423 Sound Absorption

Brief Description: Silk Metal Unit Absorbers - With Infill of 1" Fiberglass Core			
Date:	12/2/2010		
Test Request:	93638	Tested By:	Crystal Young
Measurement Procedure:	Averaging algorithm is exponential.		Notebook No.: N/A
			Page No.: N/A
Test Method: The sample was tested in compliance with ASTM C423 and ASTM E795.			

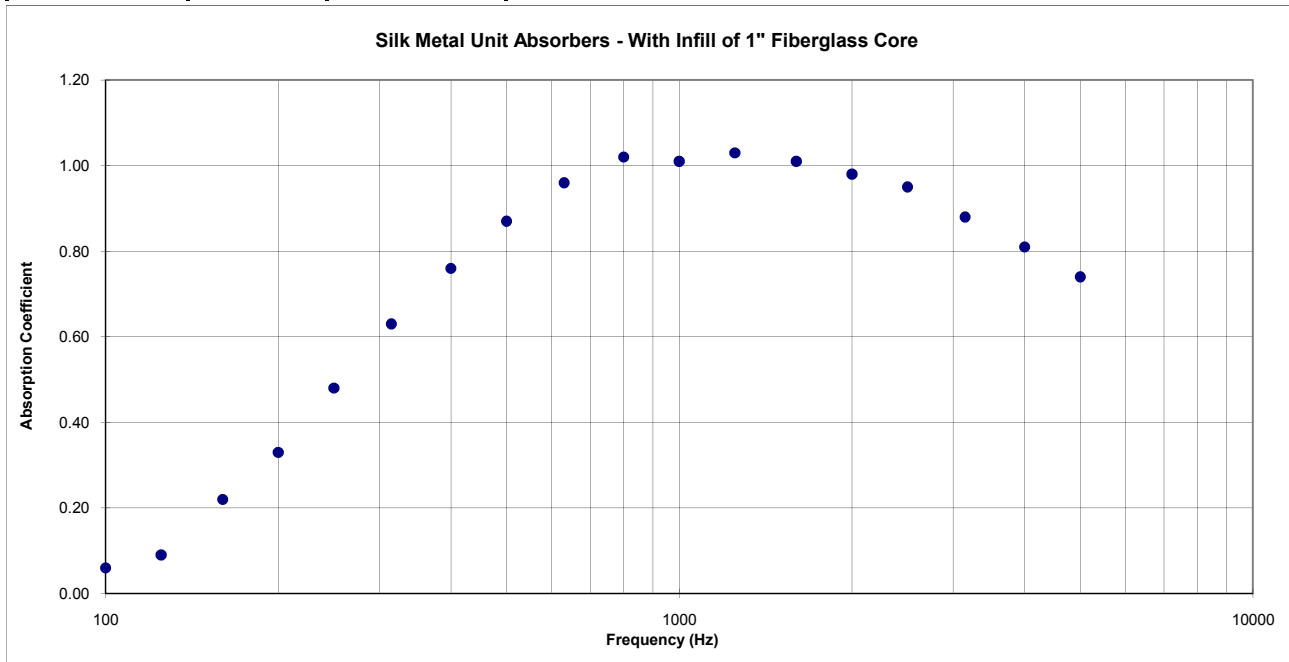
Test System: Bruel & Kjaer Type 3560 SN: 2447687 **Calibration Frequency:** 250 Hz
Sound Source: Bruel & Kjaer Generator Module Type 3109. Creating broad band pink noise. **Type:** Pistonphone **Level:** 124.00 dB
Location: Acoustics Lab B75 **Date:** 12/2/2010

Summary of Test Results :

Frequency (Hz)	Absorption Coefficient	Absorption (Metric Sabines)
100	0.06	0.35
125	0.09	0.51
160	0.22	1.28
200	0.33	1.97
250	0.48	2.87
315	0.63	3.77
400	0.76	4.53
500	0.87	5.20
630	0.96	5.70
800	1.02	6.05
1000	1.01	6.01
1250	1.03	6.10
1600	1.01	5.98
2000	0.98	5.83
2500	0.95	5.65
3150	0.88	5.23
4000	0.81	4.84
5000	0.74	4.43

	Empty Room	Full Room
Temperature (deg. C):	20.54	20.57
% Relative Humidity:	47.86	46.96
Date:	12/2/2010	12/2/2010
Atmospheric Pressure (kPa):	98	

NRC	0.85
SAA	0.84





**Acoustic and Insulation
Product Testing Laboratories**

Test Number C423_100112

ASTM C423 Sound Absorption

Full Description:	Tested By:	Crystal Young	
Weight (kg):	21.61	Weight (lb):	0.00
Area (sq. m):	5.95	Area (sq. ft.):	64.00
Mounting:	Type A - Surface Mounted		
Other Information:			

The purpose of this testing is to determine the sound absorptive properties of the submitted sample.

The test material description, whether by observation or as provided by the client is as follows:

Silk Metal Unit Absorbers - With Infill of 1" Fiberglass Core

Each panel was characterized/measured in the Owens Corning Acoustics Lab
by Don Hill on 2-Dec-10

These measurements are documented below.

All measurements and calculations were conducted in accordance with Owens Corning Test Methods:

D-01Ae, Thickness

W-01Cb, Density and Square Foot Weight.

A standard tape measure was used to obtain the lengths and widths of each panel. The lengths provided here are an average of 2 measurements and the widths are an average of 3 measurements per panel. Per D-01Ae, the thickness measurements are an average of 5 measurements per panel.

The thickness provided for the Silk Metal Unit Absorber material is an average of 5 measurements and was obtained using a Starrett® digital caliper.

The sum total area of the sample was 64.00 square feet.

Silk Metal Unit Absorber only:

Length (in.)	Width (in.)	Thickness (in.)	Weight (lbs.)	Density (pcf)	Sq.ft.wt.(psf)
96.00	96.00	1.00	31.79	5.96	0.50

Infill - 1" Fiberglass Core only:

Length (in.)	Width (in.)	Thickness (in.)	Weight (lbs.)	Density (pcf)	Sq.ft.wt.(psf)
95.93	95.70	1.04	15.85	2.86	0.25

Full Sample:

Length (in.)	Width (in.)	Thickness (in.)	Weight (lbs.)	Density (pcf)	Sq.ft.wt.(psf)
96.00	96.00	1.00	47.64	8.93	0.74

Metal density is 149.02 pcf.

Fiberglass Core infill was placed in the Silk Metal Unit Absorber with the facing placed against the perforated face of the Silk Metal Unit Absorber. This compressed the infill to 1.00 in., making the full sample thickness 1.00 in.

Individual panel data available upon request.

All calculations and physical measurements include all components associated with this sample unless otherwise noted.

The sample was given 24 hours to come to equilibrium with the atmospheric conditions of the test chamber.

The panels were butted together to form a nominal 8 ft. x 8 ft. sample.

There were no interior gaps between any of the panels nor were there any gaps between the panels and the perimeter edge frame.

The perimeter edge of the sample was sealed with an aluminum frame.

The facing side of the sample was exposed to the sound field.

The sample was placed in the designated ASTM C423 position within the 10,110 cu.ft. reverberation chamber.

Details of this position may be obtained by request.

All ASTM E795 mounting requirements were met for this test.

The source speakers were located in positions 1 and 2(standard locations) within the reverberation chamber.

Details of this position may be obtained by request.