



# Acoustical Surfaces, Inc.

**SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS**

123 Columbia Court North • Suite 201 • Chaska, MN 55318

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## Materials Technology

## Stork Twin City Testing Corporation

**PROJECT NUMBER:** 30160-08-92064-3

**PAGE:** 1 of 6

**DATE:** January 29, 2008

662 Cromwell Avenue Telephone : (651) 645-3601  
Saint Paul, MN 55114 Toll Free : (888) 645-TEST  
USA Telefax : (651) 659-7348  
Website : [www.storksmt.com](http://www.storksmt.com)

Investigative Chemistry Geotechnical Construction Materials  
Non Destructive Testing Failure Analysis Product Evaluation  
Metallurgical Analysis Materials Testing Welder Qualification

**SOUND ABSORPTION AND SOUND TRANSMISSION  
TESTING CONDUCTED ON  
2" dBA Panels – Sound Silencer™**

**Prepared for:**  
**Acoustical Surfaces, Inc**  
**Attn: Mr. Mike Mohs**  
**123 Columbia Court North, Suite 201**  
**Chaska, MN 55318**

**Client Purchase Order Number: Contract**

**Prepared By:**

**Mathew N. Botz**  
**Project Manager**  
**Product Testing Department**  
**(651) 659-7353**

**Reviewed By:**

**Kyle T. Hall**  
**Sr. Engineering Technician**  
**Product Testing Department**

**The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.**



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**PROJECT NUMBER:** 30160-07-82419-3

**PAGE:** 2 of 6

**DATE:** January 29, 2007

**Sound Transmission Class Testing (ASTM E90-04)**  
**Noise Reduction Coefficient (ASTM C423-07)**

**INTRODUCTION:**

This report presents the results of the sound transmission and sound absorption testing conducted on the 2" dBA panels. The test sample was submitted by Mr. Mike Mohs of Acoustical Surfaces, Inc (ASI). This work was completed on January 22, 2008.

This report must not be reproduced except in full with the approval of Stork Twin City Testing Corporation. The data in this report relates only to the items tested.

Stork Twin City Testing Corporation has been accredited by the U.S. Department of Commerce and the National Institute of Standards and Technology (NIST, formerly NBS) under their National Voluntary Laboratory Accreditation Program (NVLAP) for conducting ASTM C423 test procedures. This report may not be used to claim product endorsement by NVLAP, NIST or any agency of the U.S. Government.

**TEST RESULTS SUMMARY:**

*TYPE F400 NRC TEST*

			Test Results		
Test #	SAMPLE DESCRIPTION	ADDITIONAL INFORMATION	NRC	SAA	--
3	2" dBA - Sound Silencer™	Black 24"x 48" x 2"	0.65	0.63	--

*SOUND TRANSMISSION CLASS (STC) TEST*

			Test Results		
Test #	SAMPLE DESCRIPTION	ADDITIONAL INFORMATION	STC	def.	OITC
12	2" dBA - Sound Silencer™	Black 24"x 48" x 2"	7	27	6

See 'TEST DATA' section for detailed results.

**SPECIMEN DESCRIPTION:** (Also see "Test Results")

The test specimens were identified by ASI as 2" dBA – Sound Silencer™ panels. Each panel measured 24" x 48" x 2" and weighed 2.8-lbs each (0.35-psf).

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## TEST PROCEDURE

### Sound Transmission Test

ASTM:E90(04), "Laboratory Measurement of Airborne Sound Transmission of Building Partitions," was followed in every respect. The STC value was obtained by applying the Transmission Loss (TL) values to the STC reference contour of ASTM: E413(04), "Determination of Sound Transmission Class." The actual transmission loss at each frequency was calculated by the following equations:

$$TL = NR + 10 \log S - 10 \log A_2$$

where: TL = Transmission Loss (dB)

NR = Noise Reduction (dB)

S = Surface area common to both sides (sq. ft.)

A<sub>2</sub> = Sound absorption of the receiving room with the sample in place (sabins)

### OITC Procedure

ASTM:E1132(03), "Determination of Outdoor-Indoor Transmission Class", was followed in every respect. Basically, the OITC was calculated by using the sound transmission loss values in the 80 to 4000 Hz range as measured in accordance with ASTM E-90(04). These transmission loss data are then used to determine the A-weighted sound level reduction of the specimen for the reference source spectrum specified in Table 1 of ASTM E1132(03). The appropriate calculations were made to determine the OITC value. The source room has a volume of 2948-ft<sup>3</sup> (83-m<sup>3</sup>) and the termination room has a volume of 5825-ft<sup>3</sup> (165-m<sup>3</sup>).

The temperatures and relative humidity of the termination room met the requirements of the standard during and after the test. All frequencies met the requirements for 95% confidence established by the standard.

### Sound Absorption Test

ASTM C 423-07, "Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method", was followed in every respect. The test sample was tested in a Type E400 Mounting style. The material was tested on gridwork to simulate a ceiling tile installation. The overall sample had a dimension of 8'x 9' (72-ft<sup>2</sup>).

NRC was calculated by rounding the sound absorption coefficients for 250, 500, 1000 and 2000 Hz to the nearest 0.05. SAA was calculated by rounding the sound absorption coefficients for the twelve frequencies from 200 Hz to 2500 Hz to the nearest 0.01.

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**TEST EQUIPMENT:**

<u>Manufacturer</u>	<u>Model</u>	<u>Description</u>	<u>S/N</u>
Norwegian Electronics	NE830	Real Time Analyzer	11511
Brüel & Kjær	3923	Rotating Microphone Boom	815424
Norsonic (Source Rm)	1230	Pressure Condenser Microphone	26361
Brüel & Kjær (Term Rm)	4192	Pressure Condenser Microphone	2360314

**REMARKS:**

The test sample will be retained for a period of **15-days** and then discarded unless notified by the client.

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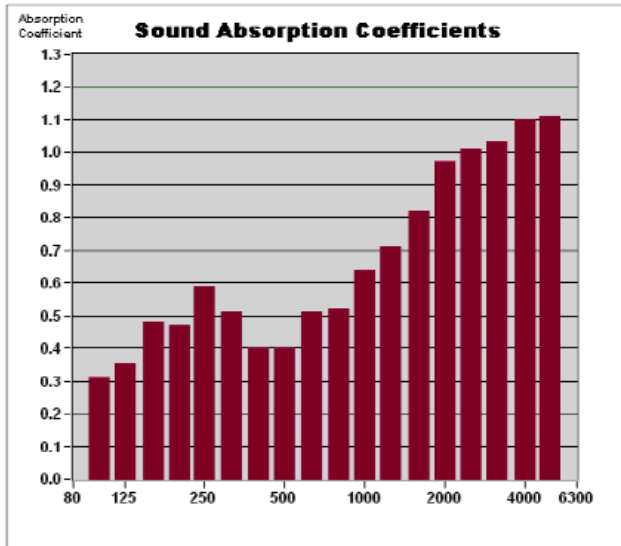
**TEST RESULTS:**

Filename:  **ASTM C423 - Sound Absorption**

Client:  Product:  Model #:  Quantity:  Comment:

Sample Size - Wt.:  Sample Description:  Time Stamp:  Total Sample Area:

F (Hz)	Absorption Coefficient	Absorption (Sabins)*
100	0.31	22.30
125	0.35	25.30
160	0.48	34.76
200	0.47	33.71
250	0.59	42.56
315	0.51	36.73
400	0.40	29.06
500	0.40	29.01
630	0.51	36.70
800	0.52	37.22
1000	0.64	46.16
1250	0.71	51.41
1600	0.82	58.89
2000	0.97	69.74
2500	1.01	72.65
3150	1.03	74.16
4000	1.10	79.30
5000	1.11	80.03



Temp (°C)  R.H. (%)  ATM (mbar)

\* total absorption based on 72.0 ft²

**SAA = 0.63 NRC = 0.65**

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**TEST RESULTS:**

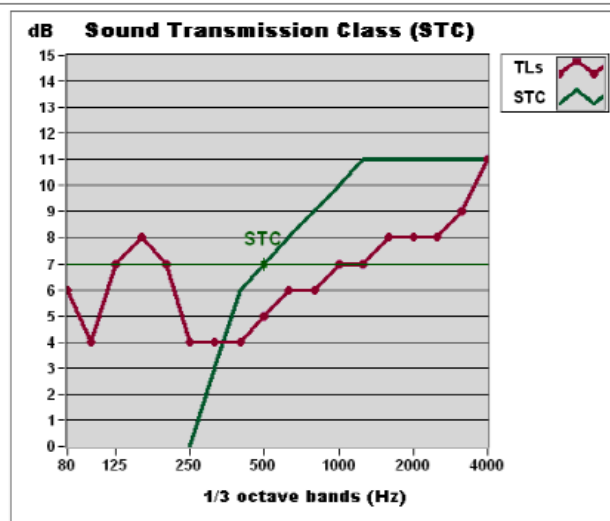
Filename:  **ASTM E90 - Laboratory Sound Transmission Class**

Project Folder:  Client:  Product:  Model #:  Quantity:  Comment:

Sample Size - Wt.:  Sample Description:

Time Stamp:

F (Hz)	TLs	95% CI	def
80	6	2.4	-
100	4	1.9	-
125	7	1.6	0
160	8	1.5	0
200	7	1.0	0
250	4	0.8	0
315	4	0.5	0
400	4	0.3	2
500	5	1.8	2
630	6	1.6	2
800	6	1.4	3
1000	7	1.2	3
1250	7	1.1	4
1600	8	0.8	3
2000	8	0.7	3
2500	8	0.6	3
3150	9	0.5	2
4000	11	0.5	0



Temp (°C)  R.H. (%)  ATM (mbar)

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