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Materials Technology

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Investigative Chemistry
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SOUND TRANSMISSION AND SOUND ABSORPTION TESTING CONDUCTED ON AN ACOUSTICAL PANEL

Prepared for:
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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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NVLAP LAB CODE 200046-0

PROJECT NUMBER: 30160-08-91108

DATE: January 7, 2008

SOUND TRANSMISSION (STC) –ASTM E90-04
SOUND ABSORPTION (NRC)-ASTM C423-07

INTRODUCTION:

This report presents the results of sound transmission and sound absorption testing conducted on an Acoustical Panel. The test sample was submitted by Mr. Clayton Wegner of CK Wegner. This work was completed on January 7, 2008.

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 E90 & 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:

ASTM C423

				Test Results		
Test #	**Panel Identification**	**Weight (lbs)**	**Weight (psf)**	**NRC**	**SAA**	**--**
1	Acoustical Panel	108	3.0	**0.10**	**0.09**	--

ASTM E90

				Test Results		
Test #	**Panel Identification**	**Weight (lbs)**	**Weight (psf)**	**STC**	**Def.**	**OITC**
2	Acoustical Panel	108	3.0	**28**	**32**	**24**

Tabular and graphical presentations of the data are presented under “TEST RESULTS” below.

SPECIMEN DESCRIPTION: (Also see "Test Results")

The test specimen was identified as an Acoustical Panel, with wood skins and a convex shape. The panel dimensions were 108” x 47-3/4” x 1-7/8” and weighed 108-lbs (3.0 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_2 = Sound absorption of the receiving room with the sample in place (sabins)

OITC Procedure

ASTM:E1332(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 E1332(03). The appropriate calculations were made to determine the OITC value. The source room has a volume of 2948-ft^3 (83-m^3) and the termination room has a volume of 5825-ft^3 (165-m^3).

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. Two (2) panels were tested on the test chamber surface (Type A) with the convex side exposed to the noise. The panel ends were capped with 5/8" sheetrock to seal off the back side of the panel.

Noise Reduction Coefficient (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:

Manufacturer	Model	Description	S/N
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: test #1

ASTM C423 - Sound Absorption

Client	Product	Model #	Quantity	Comment
C K Wegner	Acoustic Panels		1	

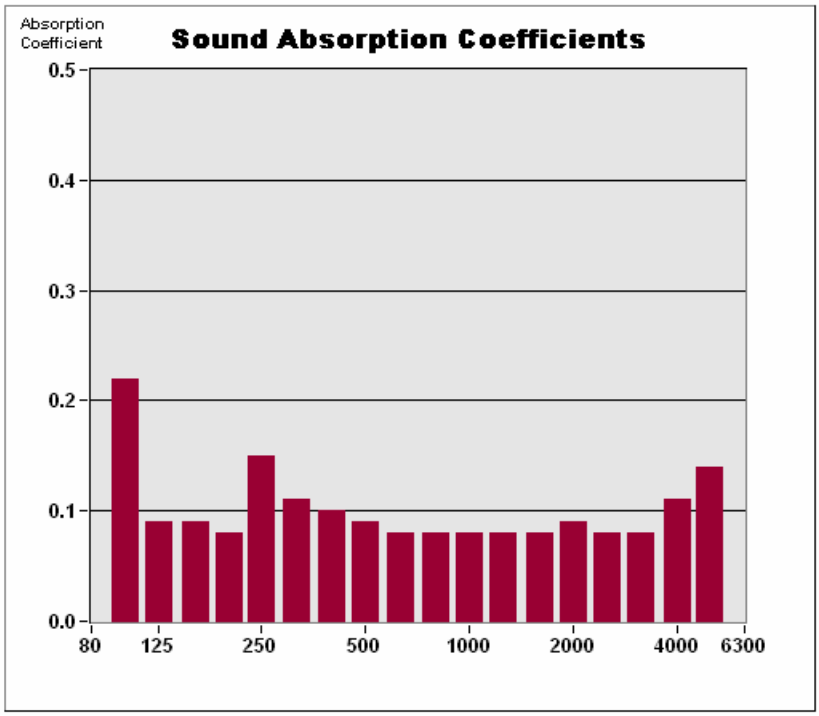
Sample Size - Wt.: 108.0 in x 95.4 in x 1-7/8" - 216 lbs

Sample Description: C K Wagmer: 2-Acoustic Panels: : Panel Size: 108"x 47-3/4"x 1-7/8"per panel, (2) Panels 108"x 95.4" :

Time Stamp: Mon, Dec 10, 2007 - 10:26 AM

Total Sample Area: 71.6 ft²

F (Hz)	Absorption Coefficient	Absorption (Sabins)*
100	0.22	16.00
125	0.09	6.39
160	0.09	6.42
200	0.08	5.79
250	0.15	10.92
315	0.11	7.54
400	0.10	6.99
500	0.09	6.21
630	0.08	6.07
800	0.08	6.05
1000	0.08	5.49
1250	0.08	5.50
1600	0.08	5.40
2000	0.09	6.21
2500	0.08	5.84
3150	0.08	5.59
4000	0.11	8.12
5000	0.14	9.86



Temp (°C)	R.H. (%)	ATM (mbar)
21.0	56	1000

* total absorption based on 71.6 ft²

SAA = 0.09 NRC = 0.10

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TEST RESULTS:

Filename: test #2

ASTM E90 - Laboratory Sound Transmission Class

Project Folder	Client	Product	Model #	Quantity	Comment
91108 Wegner	CK Wegner	Acoustical Panel		1	

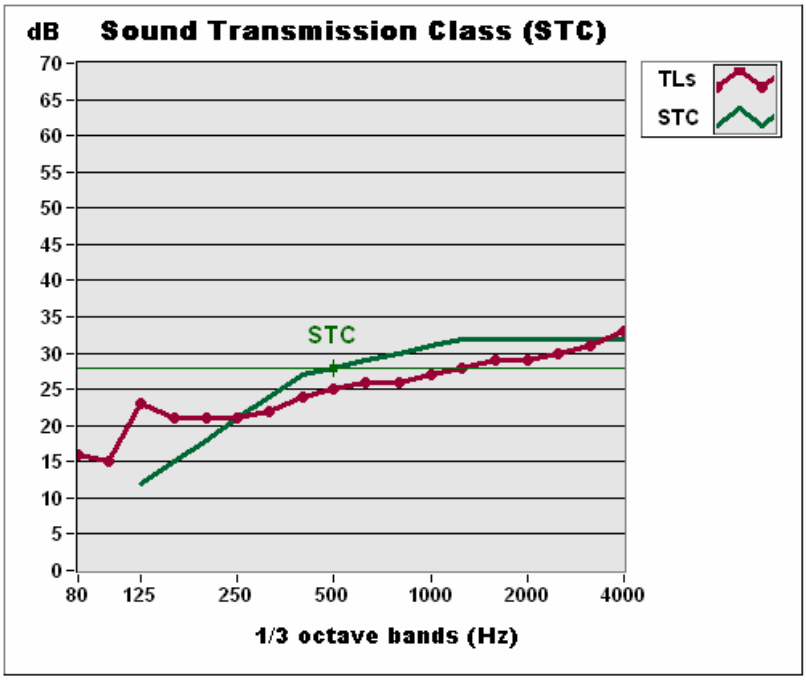
Sample Size - Wt.: 75.1 in x 47.8 in x 1-7/8" - 74 lbs

Time Stamp: Mon, Jan 07, 2008 - 10:41 AM

Sample Description: CK Wegner (1) Acoustical Panel :
75-1/8" x 47-3/4" (1) Acoustical Panel: :

TLs - sample TL values (dB)
95% CI - 95% Confidence Interval (dB)
def - STC deficiencies (dB)

F (Hz)	TLs	95% CI	def
80	16	3.3	-
100	15	2.4	-
125	23	2.7	0
160	21	3.0	0
200	21	2.6	0
250	21	2.6	0
315	22	2.5	2
400	24	2.3	3
500	25	1.8	3
630	26	1.7	3
800	26	1.4	4
1000	27	1.2	4
1250	28	1.0	4
1600	29	0.8	3
2000	29	0.6	3
2500	30	0.5	2
3150	31	0.4	1
4000	33	0.4	0



Temp (°C): 20.4 | R.H. (%): 52 | ATM (mbar): 983

STC = 28 def: 32
OITC: 24