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

**SOUND TRANSMISSION TESTING AND SOUND ABSORPTION
TESTING CONDUCTED ON WINDOW FASHIONS
- STYLE 8503 -**

**Prepared for:
3G MERMET
Attn: Mr. Ken Witherell
5970 North Main Street
Cowpens, SC 29330**

Client Purchase Order Number: Reference # 800-6260

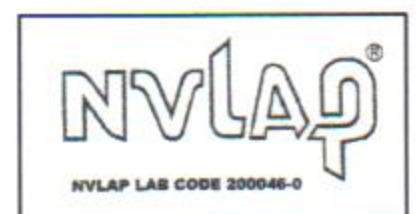
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The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.



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**SOUND ABSORPTION (NRC)- ASTM C423-02
SOUND TRANSMISSION (STC) –ASTM E 90-04**

INTRODUCTION:

This report presents the results of sound absorption and sound transmission testing conducted on Style 8503 fabrics submitted by Mr. Ken Witherell of 3G Mermet. This work was completed on July 17, 2006.

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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 test procedure. This report may not be used to claim product endorsement by NVLAP, NIST or any agency of the U.S. Government.

TEST RESULTS SUMMARY:

<u>Test Material</u>	<u>SOUND TRANSMISSION</u>			<u>SOUND ABSORPTION</u>	
	<u>STC</u>	<u>def</u>	<u>OITC</u>	<u>NRC</u>	<u>SAA</u>
“STYLE 8503”	1	28	2	0.35	0.33

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

SPECIMEN DESCRIPTION: (Also see "Test Results")

The specimen was described as being a vinyl fabric, identified as “Style 8503”. The specimen had dimensions of 95-3/4” x 96” x 0.02” with a weight of 5.2-lbs and was charcoal-grey color.

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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.)
A₂ = Sound absorption of the receiving room with the sample in place (sabins)

OITC Procedure

ASTM:E1332(04), "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-ft³ (83-m³) and the termination room has a volume of 5825-ft³ (165-m³).

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 423-02, "Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method", was followed in every respect. The shade was suspended (Type G mounting) approximately 4-1/2" from a concrete wall surface and the bottom edge was 23-1/2" from the reflective floor surface of the reverberation chamber.

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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MNB\77987-Mermet-2.doc

TEST RESULTS:

Filename

Test# 2

ASTM E90 - Laboratory Sound Transmission Class

Project Folder

77987 3G

Client

Mermet Weaving

Product

Shade Material

Model #

Style 8503

Quantity

1

Comment

Sample Size - Wt.

62.5 in x 61.5 in x 0.017" - 5 lbs

Sample Description

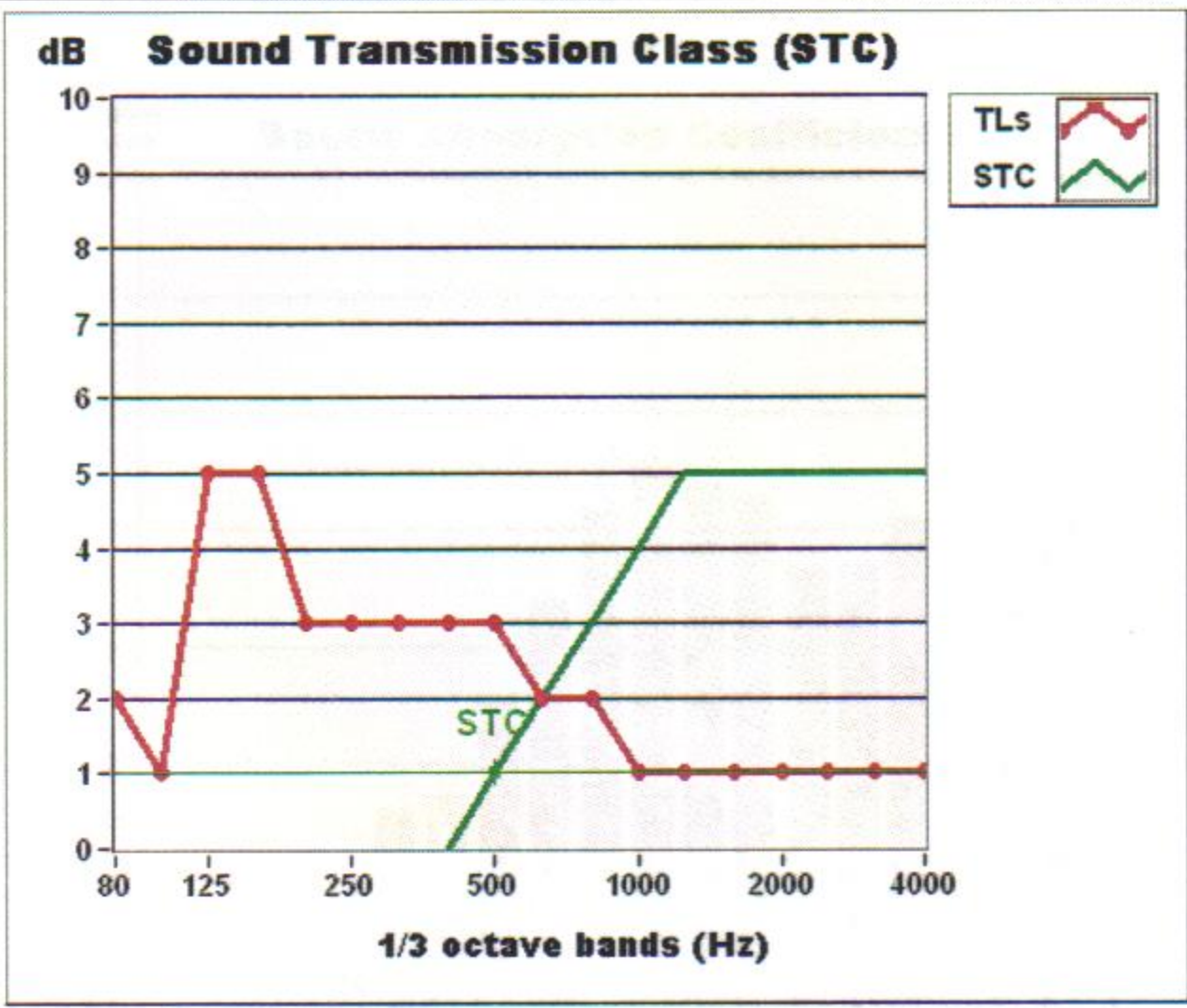
3 G Mermet Weaving: : Shade Material: Charcoal-Gray, vinyl weaving fabric : Style 8503

Time Stamp

Mon, Jul 17, 2006 - 11:41 AM

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

F (Hz)	TLs	95% CI	def
80	2	2.5	-
100	1	1.7	-
125	5	1.5	0
160	5	1.5	0
200	3	0.9	0
250	3	0.5	0
315	3	0.5	0
400	3	0.5	0
500	3	0.5	0
630	2	0.3	0
800	2	0.3	1
1000	1	0.3	3
1250	1	0.3	4
1600	1	0.3	4
2000	1	0.3	4
2500	1	0.2	4
3150	1	0.3	4
4000	1	0.4	4



STC = 1 def: 28
OITC: 2

Temp (°C) **22.1** R.H. (%) **57** ATM (mbar) **994**

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TEST RESULTS:

Filename

Test# 4

ASTM C423 - Sound Absorption

Client

Mermet Weaving

Product

Shade Material

Model #

Style 8503

Quantity

1

Comment

Sample Size - Wt.

95.8 in x 95.5 in x 0.017" - 5 lbs

Sample Description

3 G Mermet Weaving: : Shade Material: Charcoal-Gray, vinyl weaving fabric :

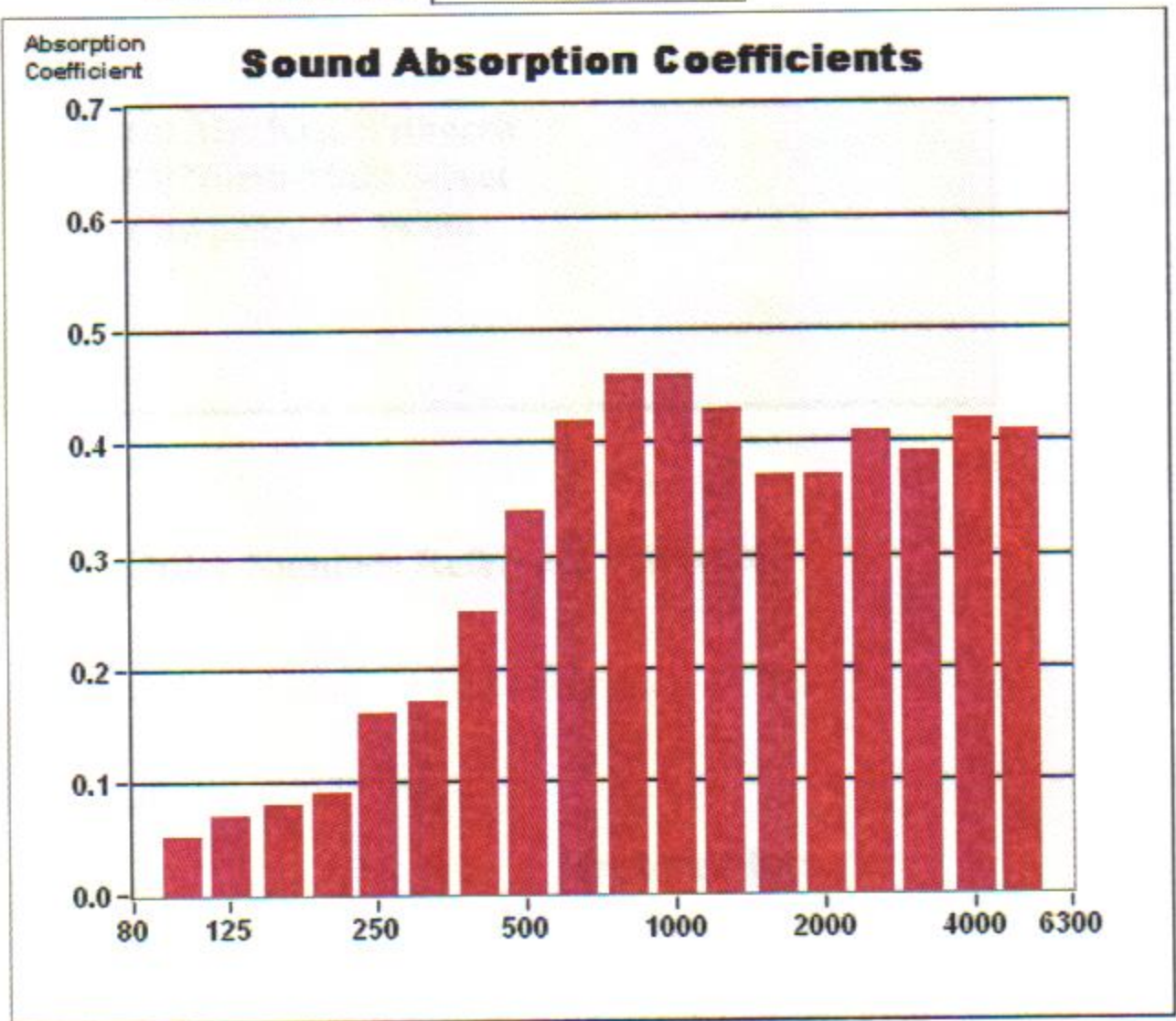
Time Stamp

Mon, Jul 17, 2006 - 2:02 PM

Total Sample Area

63.5 ft²

F (Hz)	Absorption Coefficient	Absorption (Sabins)*
100	0.05	3.48
125	0.07	4.43
160	0.08	5.11
200	0.09	5.46
250	0.16	10.25
315	0.17	10.97
400	0.25	15.65
500	0.34	21.71
630	0.42	26.39
800	0.46	29.00
1000	0.46	29.49
1250	0.43	27.21
1600	0.37	23.20
2000	0.37	23.56
2500	0.41	25.91
3150	0.39	24.92
4000	0.42	26.73
5000	0.41	26.17



Temp (°C) **22.1** R.H. (%) **57** ATM (mbar) **994**

* total absorption based on 63.5 ft²

SAA = 0.33 NRC = 0.35

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