



# Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

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We Identify and **S.T.O.P.** Your Noise Problems



662 CROMWELL AVENUE  
ST. PAUL, MN 55114  
PHONE: 651/645-3601

TO: Rendered by Manufacturer and Released to  
Acoustical Surfaces, Inc.  
123 Columbia Court North  
Chaska, MN 55318

DATE: August 14, 1990

PROJECT NO: 4143 01-0411 D

PROJECT: Wedge Pattern 8" Polyurethane Foam

## NOISE REDUCTION COEFFICIENT TEST

### INTRODUCTION:

This report presents the results of an NRC test conducted on acoustical foam wedges.

Twin City Testing Corporation has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST, formally NBS) under their National Voluntary Laboratory Accreditation Program (NVLAP) for conducting this test procedure.

### TEST RESULTS SUMMARY:

The NRC of the sample described herein is 1.55 (see individual frequency values below under TEST RESULTS). This value was calculated based on the area covered by the specimen not the actual surface area.

### SPECIMEN IDENTIFICATION:

Manufacturer: Rendered by Manufacturer and Released to Acoustical Surfaces, Inc.

Type: Wedge Pattern 8" Polyurethane Foam

Size: Sample – 7.5" x 72" x 96" Specimen – 7.5" x 12" x 12"

Weight: 38.40 lbs. 0.80 psf

### TEST PROCEDURE:

The test was conducted in accordance with ASTM:C423 (84a), "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The sample was placed near, but not at the center of a 5300 cubic foot reverberation chamber. The 12" x 12" wedges were placed in an alternating pattern on 1/4" furring strips laid flat on the floor (mounting type "D"). Reverberation times of the empty chamber were compared to the reverberation time of the chamber with the specimen inside, to obtain absorption coefficients at the six octave band test frequencies. Absorption coefficients are the fraction of diffuse incident sound absorbed by the specimen. The fraction of absorbed sound is measured in Sabins per square foot of Specimen.

The Noise Reduction Coefficient (NRC) is the average of the absorption coefficients for 250, 500, 1000, and 2000 Hertz. the average is expressed to the nearest integral of 0.05.

The sound absorption coefficient for each frequency was calculated by the following equation:

$$A = [(A2 - A1) / S]$$

Where

A = Absorption coefficient of test specimen, Sabins/ft<sup>2</sup>

A1 = Absorption of empty room, Sabins

A2 = Absorption of room with specimen, Sabins

S = Surface area, ft<sup>2</sup>



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### TEST EQUIPMENT:

<u>Manufacturer</u>	<u>Model</u>	<u>Description</u>	<u>S/N</u>
Norwegian Electronics	NE830	Real Time Spectrum Analyzer	11511
Bruel & Kjaer	4132	Pressure Condenser Microphone	239016
Bruel & Kjaer	3923	Rotating Microphone Boom	263439
Larson-Davis	2560	Pressure Condenser Microphone	1032

### TEST RESULTS:

<u>FREQ</u>	<u>COEFFICIENT</u>	<u>C.L.</u>	<u>FREQ</u>	<u>COEFFICIENT</u>	<u>C.L.</u>
<u>HZ</u>	<u>(SABINS/FT2)</u>		<u>HZ</u>	<u>(SABINS/FT2)</u>	
125	0.81	0.07	1000	1.30	0.02
250	1.63	0.05	2000	1.45	0.01
500	1.57	0.03	4000	1.42	0.01

Noise Reduction Coefficient (NRC) = 1.55

FREQ = Frequency – Octave Band (Hz)

COEFFICIENT = Sound Absorption Coefficient, Sabins/ft<sup>2</sup>

C.L. = Uncertainty, Sabins / ft<sup>2</sup> (95% Confidence Limit)

### TWIN CITY TESTING CORPORATION:

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