



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:
Architectural Surfaces, Inc./Acoustical Surfaces Inc.

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), formerly 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 Architectural Surfaces, Inc./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 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 times 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/ft²
A1 = Absorption of empty room, Sabins
A2 = Absorption of room with specimen, Sabins
S = Surface area, ft²



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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 | 139016 |
| 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 / ft²

C.L. = Uncertainty, Sabins / ft² (95% Confidence Limit)

TWIN CITY TESTING CORPORATION:

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