

**ACOUSTIC SYSTEMS
ACOUSTICAL RESEARCH FACILITY
OFFICIAL LABORATORY REPORT
AS-TL1437A**



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Subject: Sound Transmission Loss Test

Date: May 13, 1999

Contents: Transmission Loss Data, One-third Octave Bands
Transmission Loss Data, Octave Bands
Sound Transmission Class Rating
Outdoor / Indoor Transmission Class Rating

on

ALUMAGUARD 60™

for

Polyguard Products

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INTRODUCTION

The Transmission Loss of a partition in a specified frequency band is defined as ten times the common logarithm of the airborne sound power incident on the partition to the sound power transmitted by the partition and radiated on the other side. The quantity so obtained is expressed in decibels.

APPLICABLE STANDARDS

ASTM E 90-97, "Standard Method for Laboratory Measurement of Airborne Sound
Transmission Loss of Building Partitions"
ASTM E 413-87, "Classification for Sound Insulation Rating"
ASTM E 1332-90, "Classification for Determination of Outdoor-Indoor Transmission Class"

SPECIMEN DESCRIPTION

The test specimen consisted of a barrier material whose dimensions were nominally 1524 mm in width by 914 mm in height by 1.6 mm in thickness [60 inches by 36 inches by 1/16 inch]. The test specimen was manufactured, submitted for test, and designated "ALUMAGUARD 60™ by Polyguard Products, Inc. of Ennis, TX. The product consisted of 1.6 mm [1/16 inch] rubberized asphalt material bonded to 0.025 mm [0.001 inch] aluminum. A roll of this test specimen was provided, out of which the test specimen was removed from a random location along the roll's length.

The weight of the test specimen was 2.3 kg [*5 pounds*].

TEST SPECIMEN MOUNTING

The specimen was mounted in an opening of the high transmission loss filler installed in the 2440 mm by 2440 mm transmission loss test opening. The perimeter of the specimen was sealed to the edge of the test aperture with dense mastic putty. The calculated transmission loss of the composite assembly (test specimen and filler wall) was adjusted to account for sound power transmitted through the filler wall.

DESCRIPTION OF TEST

Two (2) loudspeakers in a 200 cubic meter reverberation chamber, designated as the "Source Room", produced broadband pink noise. A 254 cubic meter reverberation chamber, designated as the "Receive Room", is coupled to the Source Room through the transmission loss opening. The steady-state space-time average sound pressure levels in the Source and Receive Room were determined using rotating microphone booms and a Norsonic NI-830 Dual Channel Real Time Analyzer. Sound absorption in the Receive Room was determined by reverberation time measurements. The precision of the resulting calculated Sound Transmission Loss varies with frequency band and is included in the Data Table that follows. The test was performed in accordance with ASTM E90-97 except where discussed. This test took place at ACOUSTIC SYSTEMS ACOUSTICAL RESEARCH FACILITY, Austin, Texas, on April 14, 1999.

TRANSMISSION LOSS DATA

The Sound Transmission Loss of the test specimen at the preferred one-third octave band center frequencies is tabulated below and then presented graphically. Octave-band Transmission Loss values are calculated as described in Section 12.4 of ASTM E90-97.

Polyguard Products– ALUMAGUARD 60™

| 1/3 Octave Band Center Freq (Hz) | Transmission Loss (dB) | Uncertainty (+/- dB) | Notes | Octave Band TL (dB) | STC Deficiencies |
|----------------------------------|------------------------|----------------------|-------|---------------------|------------------|
| 50 | 10 | | [g] | | |
| 63 | 10 | | [g] | 9 | |
| 80 | 7 | 2.0 | [g] | | |
| 100 | 8 | 1.9 | | | |
| 125 | 9 | 2.6 | | 8 | |
| 160 | 7 | 1.6 | | | |
| 200 | 8 | 0.7 | | | |
| 250 | 9 | 1.0 | | 9 | 2 |
| 315 | 10 | 0.7 | | | |
| 400 | 12 | 0.7 | | | 5 |
| 500 | 14 | 0.5 | | 14 | 4 |
| 630 | 16 | 0.4 | | | 3 |
| 800 | 17 | 0.4 | | | 3 |
| 1000 | 18 | 0.4 | | 18 | 3 |
| 1250 | 20 | 0.3 | | | 2 |
| 1600 | 22 | 0.2 | | | |
| 2000 | 23 | 0.3 | | 23 | |
| 2500 | 25 | 0.3 | | | |
| 3150 | 27 | 0.2 | | | |
| 4000 | 29 | 0.2 | | 28 | |
| 5000 | 29 | 0.3 | | | |
| 6300 | 32 | 0.4 | | | |
| 8000 | 34 | 0.5 | | 34 | |
| 10000 | 35 | 0.8 | | | |
| STC | 18 | | | | |
| OITC | 13 | | | | |

Note: Reverberation times are calculated based on the first 15 dB of decay including an initial 5 dB drop. Acoustic Systems maintains in its files quality assurance documentation indicating the result magnitude and uncertainty are consistent with calculation methods of Section 11.4.1 of ASTM E 90-97. [a]: Receive room SPL corrected for background noise; [b]: Receive room SPL too close to ambient. Correction of 2 dB applied and result represents lower bound for TL in this band; [c]: Correction made for flanking transmission; [d]: Transmission Loss of specimen too close to facility limit. No correction applied and result represents lower bound for TL in this band; [e]: Transmission Loss of specimen too close to filler wall. No correction applied and result represents lower bound for TL in this band; [f]: Insufficient precision to meet requirements of Section A.2.2 of ASTM E 90-97; [g] An insufficient number of statistically independent samples are available in the band to determine precision.

During the test, environmental conditions in the Receive Room were 26.1C with 73.9% relative humidity. Conditions in the Source Room were 25C with 65.6% relative humidity. The precision values [±] tabulated above represent 95% probability that the true mean value lies within the stated range.

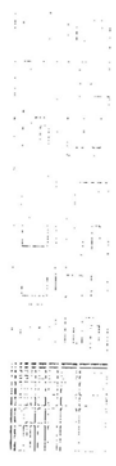
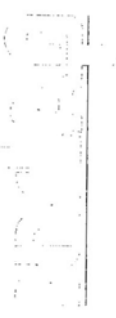
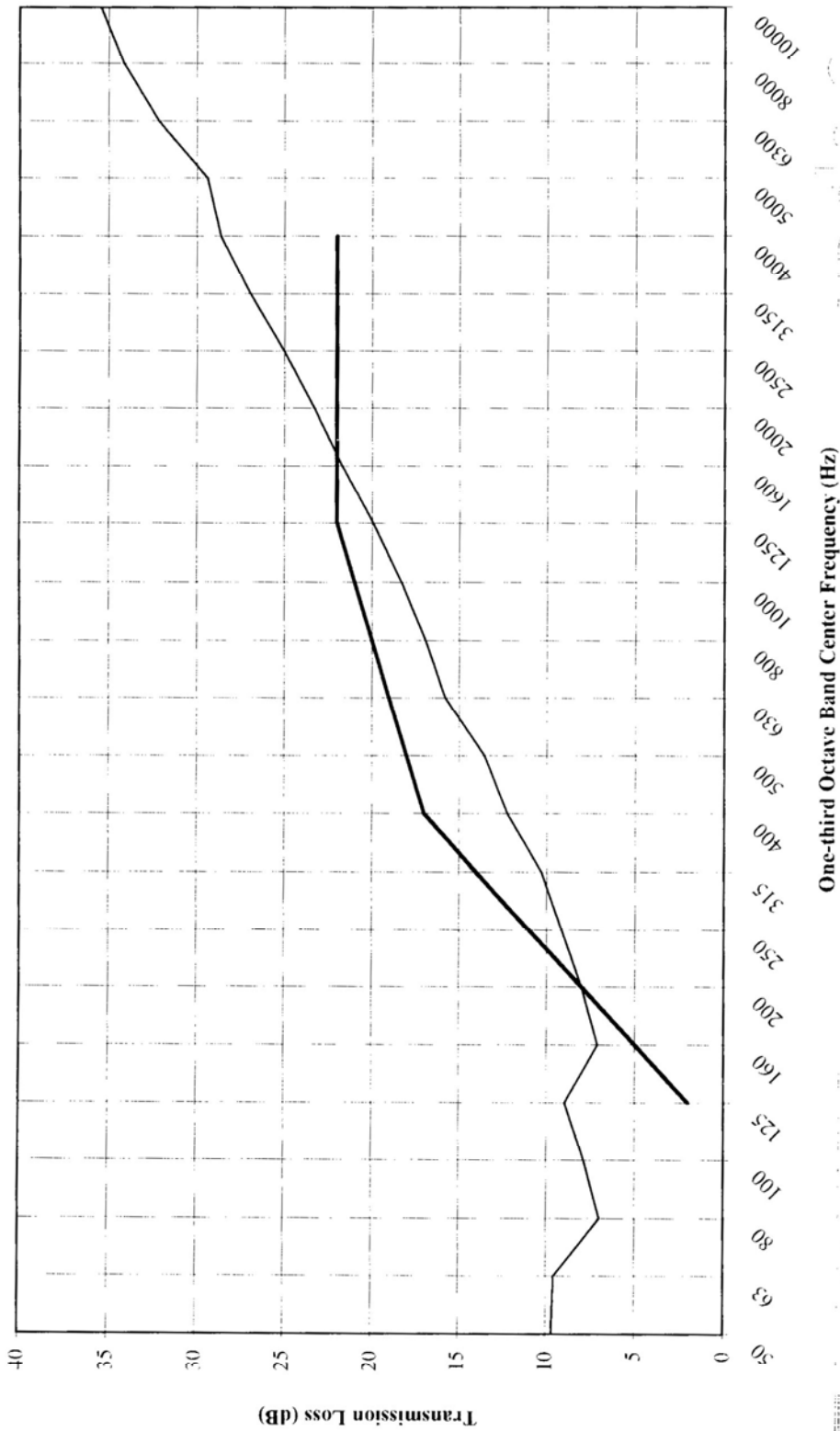
Respectfully Submitted,



Michael C. Black
Laboratory Technical Director

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