



Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

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Job No. 3016557

January 29, 2002

REPORT NO. 3016557-007

**SOUND TRANSMISSION LOSS
AND CLASSIFICATION OF A FLOOR/CEILING ASSEMBLY
WITH CERAMIC TILES OVER INSULAMENT UNDERLAYMENT**

RENDERED BY MANUFACTURER AND RELEASED TO:

**ACOUSTICAL SURFACES INC.
123 COLUMBIA COURT NORTH • SUITE 201
CHASKA, MN 55318**

INTRODUCTION

This report gives the results of a Sound Transmission Loss test and the determination of the Sound Transmission Class of a floor/ceiling assembly with Ceramic Tiles over Insulament Underlayment. The underlayment was selected and supplied by the client and was received at the laboratories on December 18, 2001. The test sample appeared to be in new, unused condition upon arrival.

AUTHORIZATION

Purchase Order No. 9218.

TEST METHOD

The specimen was tested in accordance with the American Society for Testing and Materials designation ASTM E90-99, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions". It was classified in accordance with the American Society for Testing and Materials designation ASTM E413-87 (Reapproved 1999), "Classification for Rating Sound Insulation".

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GENERAL

ASTM Test Method E90-99

The sound-insulating property of a partition element is expressed in terms of the sound transmission loss. The procedure for determining this quantity is to mount (and perimeter seal) the test specimen as a partition between two reverberation rooms. Sound is introduced in one of the rooms (the source room) and measurements are made of the noise reduction between source room and receiving room. The rooms are so arranged and constructed that the only significant sound transmission between them is through the test specimen.

The purpose of the Sound Transmission Class (STC) is to provide a single figure rating that can be used for comparing the sound-insulating properties of partition elements used for general building design purposes. The higher the rating (STC) the greater the sound insulating properties of the partition.

DESCRIPTION OF TEST ASSEMBLY

The test floor consists of a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The structural members are an Open Joist 2000 system, 16 inches deep installed 24 inches on center. The sub flooring is 5/8 inch thick tongue and groove plywood. The bridging is continuous 2 x 4 nailed to the bottom chord and the sides of the diagonals with 2 inch long nails. Resilient channels, 24 gauge galvanized steel were spaced 16 inches on center and attached to the bottom chord by screws. The insulation is 5-1/2 inches cellulose with a density of 1.6 pcf. The ceiling is gypsum board, 5/8 inches thick, with the long edges located between the joists perpendicular to the resilient channels, short edges are staggered by 4 ft. Sheets are fastened to the resilient channels by means of 1-1/2 inch screws located 1/2 inch away from the edge and 3 inches from the long edges; screws are space 6 inches on center. Joints are taped and finished with two layers of compound.

The topping over the tongue and groove plywood sub-floor was 1-1/2 of GypCrete.

DESCRIPTION OF TEST SPECIMEN

The test flooring was Ceramicraft 12 x 12 inch glazed ceramic tiles, 1/4 inch thick. The underlayment was cotton fiber Underlayment, 1/8" thick. The tiles were grouted, adhered to the underlayment and the underlayment adhered to the Gypcrete in accordance with the manufacturer's instructions.



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RESULTS OF TEST

1/3 Octave Band Center Frequency <u>Hz</u>	<u>Sound Transmission Loss in dB</u>
80	32
100	35
125	36
160	34
200	37
250	37
315	44
400	41
500	46
630	51
800	53
1000	58
1250	61
1600	63
2000	65
2500	62
3150	66
4000	63
5000	54
Sound Transmission Class	53



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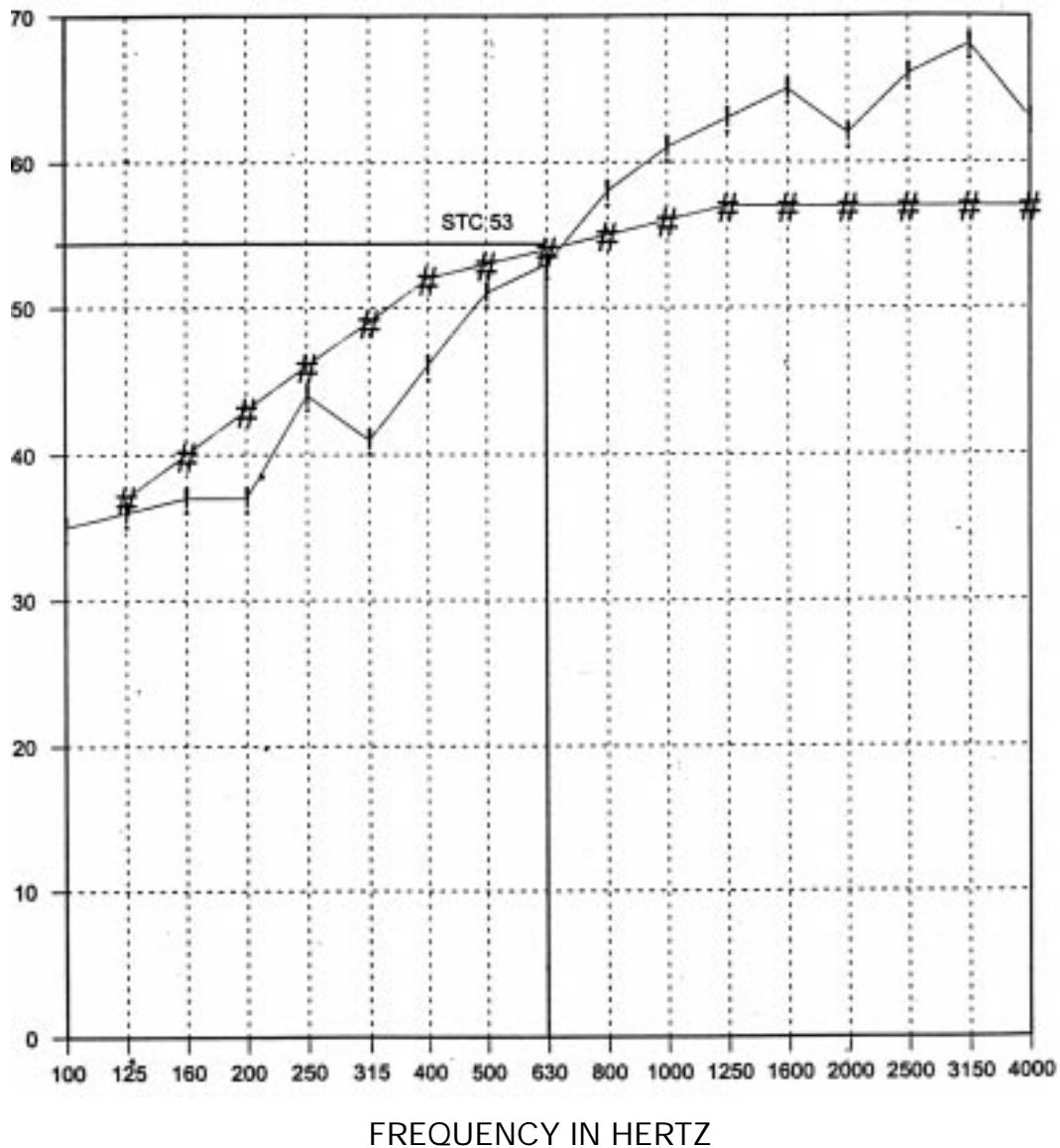
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Sound Transmission Loss

SOUND TRANSMISSION LOSS - dB



+ Sound Transmission Loss # STC Contour



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REMARKS

1. Aging Period: None
2. Ambient Temperature: 70°F.
3. Relative Humidity: 21%

CONCLUSION

The test method employed for this test has no pass-fail criteria; therefore, the evaluation of the test results is left to the discretion of the client.

Date of Test: December 31, 2001

Report Approved By:

James R. Kline, Technician
Acoustical Testing