



# REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 3182314

Date: July 22, 2009

REPORT NO. 3182314CRT-001

**SOUND TRANSMISSION LOSS TEST AND CLASSIFICATION  
OF 12 INCH BY 12 INCH AVAIRE CHOICE TILES  
OVER A WOOD JOIST FLOOR/CEILING ASSEMBLY  
WITH A 1 1/2 INCH THICK GYPSUM CONCRETE TOPPING**

**RENDERED TO**

**CoMc, LLC DBA AVAIRE  
13423 F STREET  
OMAHA, NE 68137**

**INTRODUCTION**

This report gives the results of a Sound Transmission Loss Test and Classification of 12 inch by 12 inch Avaire Choice tiles over a wood joist floor/ceiling with a 1 1/2 inch thick gypsum concrete topping. The flooring was selected and supplied by the client and received at the laboratories on June 12, 2009. The sample appeared to be in new, unused condition upon arrival.

**AUTHORIZATION**

Signed Intertek Quotation No. 500156559.

**TEST METHOD**

The specimen was tested in general accordance with the American Society for Testing and Materials designation ASTM E90 -04, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements", and classified in accordance with the American Society for Testing and Materials designation ASTM E413-04, "Classification for Rating Sound Insulation". The size of the source room for the measurements is smaller than the minimum recommended of 125m<sup>3</sup>. This leads to slightly elevated uncertainties in the measurement data at low frequencies and does not allow microphones to be placed in full accordance with section A.2.

## **GENERAL**

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 the rooms 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 THE FLOOR/CEILING ASSEMBLY**

The test floor is a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The structural members are open webbed wood floor trusses, 16 inches deep installed 24 inches on center. The sub flooring is 5/8 inch thick plywood. The bridging is a continuous 2 x 4 nailed to the bottom chord and the sides of the diagonals with 2 inch long nails. Single leaf RC-1 resilient channels (2½ inch x ½ inch) were spaced 16 inches on center and attached to the bottom chord by screws. The insulation is 3½ inches of fiberglass insulation. 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 1½ inch screws located ½ inch away from the edge and 3 inches from the long edges; screws are spaced 6 inches on center. Joints are taped and finished with two layers of compound. The topping over the plywood sub-floor is 1½ inches of gypsum concrete.

## **DESCRIPTION OF TEST SPECIMEN**

The test specimen consisted of 12 inch by 12 inch Avaire Choice tiles. The tiles had pre-attached plastic frames and weighed 4.4 lbs/sq. ft. The tile was grouted with Avaire flexible grout.



**RESULTS OF TEST**

**12 INCH BY 12 INCH AVAIRE CHOICE TILES  
OVER A WOOD JOIST FLOOR/CEILING ASSEMBLY  
WITH 1.50 INCHES OF GYPSUM CONCRETE**

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1/3 Octave Band Center Frequency Hertz	Sound Transmission Loss in dB
80	30
100	37
125	40
160	41
200	41
250	41
315	43
400	49
500	51
630	53
800	58
1000	63
1250	65
1600	70
2000	69
2500	68
3150	70
4000	70
5000	69
Sound Transmission Class	55

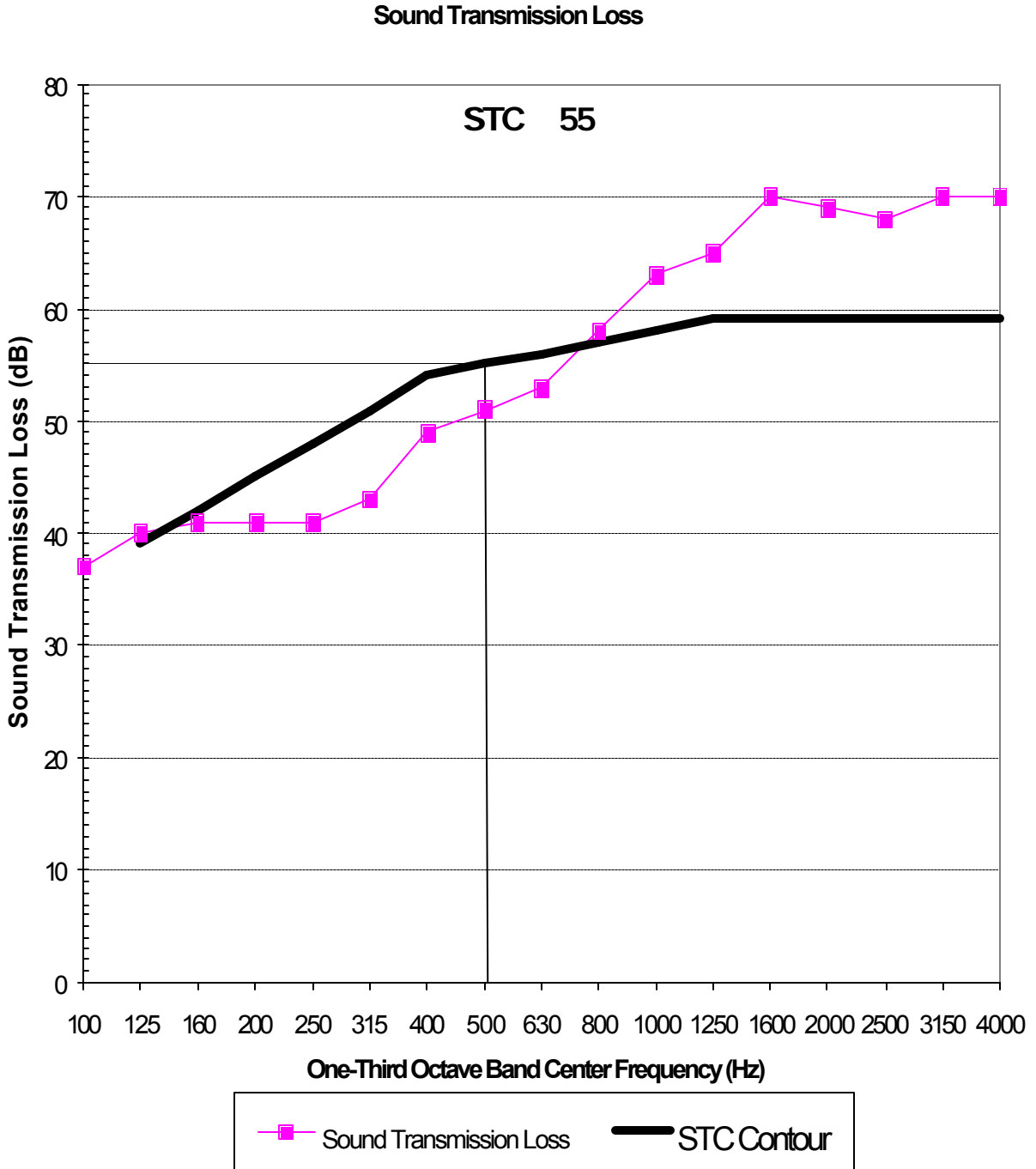
**PRECISION**

For the Intertek flooring test facility, the 95% confidence interval of TL, is as follows:

Range of One-Third Octave Bands	Transmission Loss 95% Confidence Uncertainty, dB
125 and 200	<4.0
250 and 315	<2.0
400 - 4000	<1.5



12 INCH BY 12 INCH AVAIRE CHOICE TILES





**REMARKS**

1. Gypsum Concrete: 7 Days
2. Ambient Temperature: 71°F
3. Relative Humidity: 48%

**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: July 21, 2009

Report Approved by:

A handwritten signature in black ink that reads "Brian Cyr".

Brian Cyr  
Engineer  
Acoustical Testing

Report Reviewed By:

A handwritten signature in black ink that reads "James R. Kline".

James R. Kline  
Engineer/Quality Supervisor  
Acoustical Testing

Attachments: None