

Johns Manville Technical Center Acoustical Laboratories

Contract Report 500-2095 (A2001-096C)

September 4, 2001

Subject:

**Random Incidence Sound Absorption of Whisper Walls
Acoustitherm 300-2 inch WhisperSpan Ceiling System**

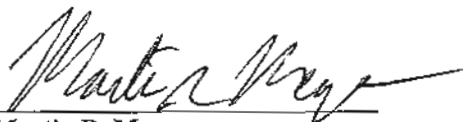
For:

**Whisper Walls.
10957 East Bethany Dr.
Aurora, CO 80014**

Submitted by:

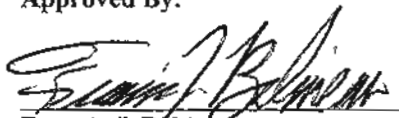
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Reported By:



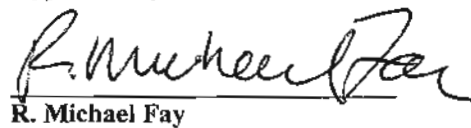
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INTRODUCTION

A series of measurements were made on September 4, 2001 at the Johns Manville Technical Center (JMTC) Acoustical Laboratories to determine the random incidence sound absorption of Acoustitherm 300-2 inch WhisperSpan Ceiling System, provided by Whisper Walls. Measurements were made in full accordance with the requirements of current ASTM standard test method C 423-99a.

TEST SPECIMEN

The specimen submitted for testing was delivered on August 31, 2001 and is described as follows:

Acoustitherm 300-2: Whisper Walls 2.0" square edge tensioning track, 2" Acoustitherm 300 fiber glass core covered with Whisper Walls 100% polyester wide span fabric, mounted on 0.5" gypsum board. Total system wt. = 166.0 lb. System weight without the gypsum board = 44.5 lb.

TEST METHOD

The tests were conducted in full accordance with the American Society of Testing and Materials (ASTM) method C 423-99a, "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method".

C 423-99a:

The specimen was tested in a type A mounting, as defined by ASTM Practice E 795-93. The sound absorbing material was mounted face side up directly on the reverberation room floor. The specimen was secured in place with 1.0" and 1.5" square aluminum framing members. The framing members were flashed to the floor with duct tape to prevent possible test bias.

Test Chamber

The JMTC reverberation room is constructed of 305 mm [12 in.] thick, reinforced concrete, surrounded by 203 mm [8 in.] thick solid concrete block walls that are spaced from the reinforced concrete walls a distance of 203 mm [8 in.]. The reverberation room has interior dimensions of 8.66 m [28 ft. 5 in.] in length by 5.49 m [18 ft.] in width with a height of 6.71 m [22 ft.], for a total volume of 319 m³ [11,253 ft³].



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Instrumentation

All sound pressure levels were measured using a Brüel and Kjær 12.7 mm [0.5 in.] type 4165 condenser microphone operating on a Brüel and Kjær type 3923 rotating microphone boom. The microphone was calibrated immediately before all measurements were started using a Brüel and Kjær type 4220 pistonphone with output corrected for local barometric pressure.

The microphone was connected to a Norwegian Electronics type NE-830 digital frequency analyzer that was configured to average the microphone output over multiple sample/decay periods. The sound field decay was measured by taking 500 8-millisecond measurements. Each 8-millisecond period was linearly averaged. Measurements were made at the third-octave bands covering a center frequency range from 100 to 5,000 Hz. The rate of sound field decay was determined by making a regressive fit to the average of 15 ensembles of 5 decays each, by the method specified in C 423-99a, Section 11.

TEST RESULTS

The detailed results of the tests, including third-octave band absorption data, the Sound Absorption Average (SAA) and Noise Reduction Coefficient (NRC) single number ratings, and a sound absorption graph are presented on pages 4 and 5 of this document. Test data sheets of the system's performance, as printed by the test equipment, are kept on record within the laboratory.



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Table 1. Sound Absorption Performance of Acoustitherm 300-2 inch WhisperSpan Ceiling System

Test Number: A2001-096-3

Frequency (Hz)	Absorption Coefficient, α (Sabins/m ²)
100	0.15
125	0.23
160	0.38
200	0.60
250	0.80
315	0.96
400	1.09
500	1.13
630	1.12
800	1.11
1000	1.11
1250	1.10
1600	1.07
2000	1.08
2500	1.07
3150	1.08
4000	1.11
5000	1.13
SAA	1.02
NRC	1.05

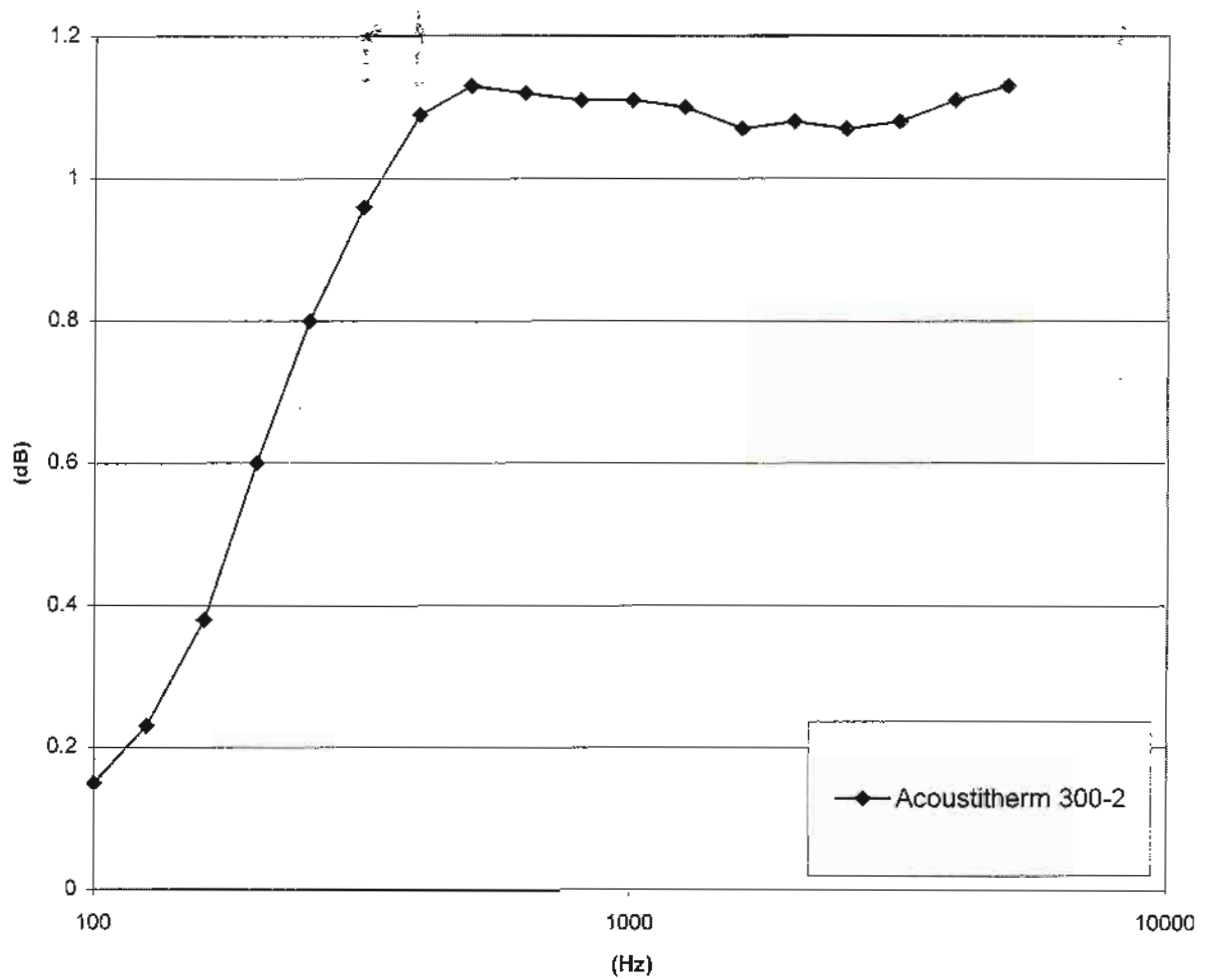
Note on Single Number Ratings: The Sound Absorption Average (SAA) is calculated as the arithmetic average of the all absorption coefficients from 200 - 2500 Hz, inclusive. The Noise Reduction Coefficient (NRC) is calculated as the arithmetic average (rounded to the nearest 0.05) of the absorption coefficients in the shaded bands only (250, 500, 1000 & 2000 Hz).



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*Graph 1. Sound Absorption Performance of Acoustitherm 300-2
inch WhisperSpan Ceiling System*



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