



Inchcape Testing Services

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Order No. 115224-411

Date: August 1, 1996

REPORT NO. 566635

SOUND TRANSMISSION LOSS TESTS AND CLASSIFICATION OF A DOUBLE LEAF DOOR

RENDERED TO

ZERO INTERNATIONAL, INC.

INTRODUCTION

This report gives the results of Sound Transmission Loss tests and the determination of the Sound Transmission Class on a double leaf door. The door was selected and supplied by the client and was received at the laboratories on June 14, 1996. It appeared to be in new condition upon arrival.

AUTHORIZATION

Purchase Order No. 2026 dated May 14, 1996, from Zero International, Inc.

TEST METHOD

The specimen was tested in accordance with the American Society for Testing and Materials designation ASTM E90-90, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions", and classified in accordance with the American Society for Testing and Materials designation ASTM E413-87, "Classification for Rating Sound Insulation" and ASTM Standard E1332-90 entitled, "Standard Classification for Determination of Outdoor-Indoor Transmission Class".

An independent organization testing for safety, performance, and certification.

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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 them is through the test specimen.

A test opening is constructed such that it is approximately one inch larger in size than the test specimen. The test specimen is placed in the test opening on a half-inch bead of "DUX-SEAL", a dense, non-hardening, clay-like material, to isolate it from the supporting base. The space between the test specimen and the wall opening is sealed on both sides employing the same sealing material. The test specimen is perimeter sealed (both sides) with the same material between the two reverberation rooms.

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.

The purpose of the Outdoor-Indoor Transmission Class (OITC) is to provide a single number rating that can be used for comparing building facade designs, including walls, doors, windows and combinations thereof. This rating is designed to correlate with subjective impressions of the ability of building elements to reduce the overall loudness of ground and air transportation noise. It is intended to be used as a rank ordering device.

DESCRIPTION OF TEST SPECIMEN

The test specimen consisted of a double leaf door assembly. The doors measured 36 inches wide by 95-1/8 inches high and 12 inches wide by 95-1/8 inches high and were installed in a steel buck which was also supplied by the client. The doors had steel skins and were filled with mineral wool. The door/frame assembly weighed 265 pounds. The doors were tested sealed in place and operable with different combinations of seals as follows:

Test #1 The entire perimeter of both doors was sealed to the metal buck rendering the doors inoperable.

Test #2 Part #188A (Head and Jambs)
Part #564A (Saddle)
Part #321A (Sweep)
Part #383A (Astragal)

DESCRIPTION OF TEST SPECIMEN Cont'd

Test #3 Part #118B (Head and Jambs)
Part #564A (Saddle)
Part #321A (Sweep)
Part #383A (Astragal)

Test #4 Part #188A (Head and Jambs)
Part #119WB (Jambs)
Part #564A (Saddle)
Part #321A (Sweep)
Part #383A (Astragal)

Test #5 Part #188A (Head and Jambs)
Part #119W (Jambs)
Part #564A (Saddle)
Part #383A (Astragal)

AT4

Test #6 Part #8485A (Head and Jambs)
Part #119WB (Jambs)
Part #564A (Saddle)
Part #383A (Astragal)

Test #6a Same conditions at Test #6 after adjusting seals and reclosing.

AT5

Test #7 Part #8485A (Head and Jambs)
Part #119WB (Jambs)
Part #544A (Saddle)
Part #321A (Sweep)
Part #383A (Astragal)

Test #8 Part #8485A (Head and Jambs)
Part #119WB (Jambs)
Part #544A (Saddle)
Part #839A (Sweep)
Part #383A (Astragal)

AT7

Test #9 Part #8485A (Head and Jambs)
Part #544A (Saddle)
Part #839A (Sweep)
Part #383A (Astragal)

The description of the test specimen was supplied by the client.

RESULTS OF TEST

1/3 Octave Band Center Frequency <u>Hz</u>	Sound Transmission Loss in dB				
	<u>Test #1</u>	<u>Test #2</u>	<u>Test #3</u>	<u>Test #4</u>	<u>Test #5</u>
80	23	22	22	21	22
100	19	18	18	20	20
125	16	16	15	16	15
160	16	15	15	15	15
200	23	23	23	23	23
250	30	30	29	30	30
315	36	33	31	34	34
400	38	33	31	34	35
500	41	35	32	36	37
630	44	36	32	37	39
800	46	34	31	35	38
1000	48	33	29	34	37
1250	50	34	29	34	37
1600	50	34	30	36	37
2000	54	32	28	38	38
2500	52	31	26	42	42
3150	50	33	26	41	41
4000	49	36	29	41	40
5000	48	34	31	40	39
Sound Transmission Class	37	33	28	35	36
Outdoor-Indoor Transmission Class	27	26	25	27	27

RESULTS OF TEST Cont'd

1/3 Octave Band Center Frequency <u>Hz</u>	Sound Transmission Loss in dB				
	<u>Test #6</u>	<u>Test #6a</u>	<u>Test #7</u>	<u>Test #8</u>	<u>Test #9</u>
80	22	21	22	21	22
100	18	18	18	19	20
125	15	16	15	15	16
160	15	14	15	15	15
200	23	23	23	23	23
250	30	30	28	30	30
315	33	34	30	33	33
400	33	35	31	34	34
500	35	37	31	36	36
630	35	38	30	35	35
800	34	37	28	34	34
1000	33	35	28	34	33
1250	31	35	28	36	34
1600	33	38	31	38	34
2000	37	40	33	40	37
2500	39	40	36	43	40
3150	39	40	36	44	41
4000	39	41	36	40	37
5000	39	41	36	40	37
Sound Transmission Class	34	35	31	35	34
Outdoor-Indoor Transmission Class	26	26	25	26	27