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THERMA-TRU CORPORATION
ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A FIBERGLASS NOISE REDUCTION DOOR, 3068 HIGH PERFORMANCE DOOR WITH FIBERGLASS SKIN

REPORT NUMBER
I4812.02-113-11-R1

TEST DATE
06/21/18

ISSUE DATE **REVISION 1 DATE**
07/03/18 04/12/22

RECORD RETENTION END DATE
06/21/22

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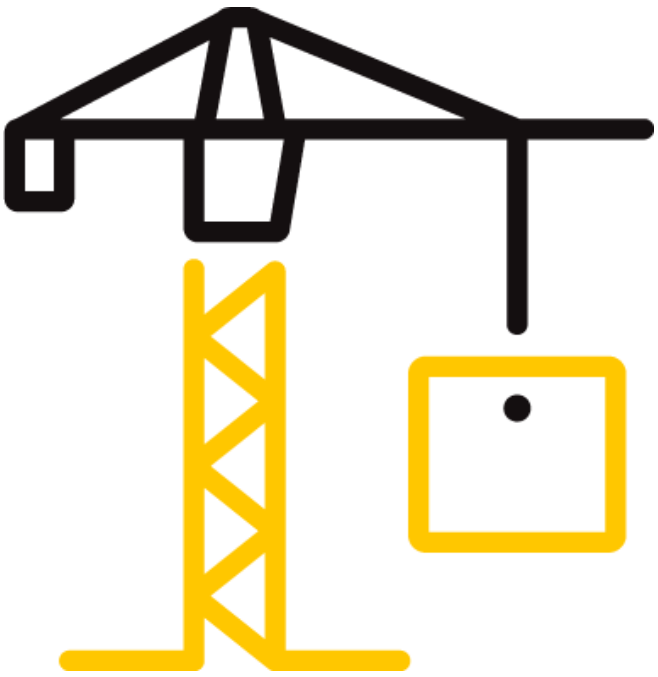

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Report No.: I4812.02-113-11-R1
Revision 1 Date: 04/12/22 Date: 07/03/18

REPORT ISSUED TO

THERMA-TRU CORPORATION
6214 Monclova Road
Maumee, Ohio 43537

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Therma-Tru Corporation to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in York, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Daniel J. Poet	**REVIEWED BY:**	Kurt A. Golden
TITLE:	Technician – Acoustical Testing	**TITLE:**	Senior Project Lead – Acoustical Testing
SIGNATURE:	Daniel Poet /jmc Digitally Signed for: Daniel Poet by Janine Sobell	**SIGNATURE:**	Kurt A. Golden Digitally Signed by: Kurt A. Golden
DATE:	04/12/22	**DATE:**	04/12/22

DJP: jmcs

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SECTION 2
SUMMARY OF TEST RESULTS

SERIES/MODEL	Fiberglass Noise Reduction Door
TYPE	3068 High Performance Door with Fiberglass Skin
GLAZING	1" IG (1/8" tempered, 3/4" air space, 1/8" tempered

OPTION I4812.01C

TEST CONDITION	Inoperable (sealed with duct seal on both sides)
DATA FILE NO.	I4812.01C
STC	36
OITC	29

OPTION I4812.01C4

TEST CONDITION	Operable
DATA FILE NO.	I4812.01C4
STC	34
OITC	29

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*
ASTM E413-16, *Classification for Rating Sound Insulation*
ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*
ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

COMMENTS
Whether the tested door system utilizes wood or composite stile edges, the ratings would remain unchanged.

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SECTION 4
SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

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SECTION 5
EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3	04/18
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64903	05/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65106	03/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64905	03/18
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	64906	03/18
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/18
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	03/18
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/18
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/18

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m^3	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m^3	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

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SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Daniel Poet	Intertek B&C
Jear Mutunda	Intertek B&C

SECTION 7
TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure level measurements were made simultaneously in receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

SECTION 8
ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating
To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating
The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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SECTION 9
SPECIMEN DESCRIPTION

	FRAME
SIZE	37-3/4" by 83-1/8"
THICKNESS	4-9/16"
CORNERS	Butted
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL: JAMBS AND HEAD	Wood
MATERIAL: Sill	Aluminum/Composite
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A

The leaf was 37-3/4" wide by 79-1/4" high by 1-3/4" thick. The daylight opening size was 20-3/4" wide by 62-7/8" high.

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	Therma-Tru Long Reach foam-filled leaf gasket	1Row	Head, lock jamb
	Therma-Tru foam-filled leaf gasket	1 Row	Hinge jamb
	3-1/2" Q-Lon® foam-filled wedge pad	2	Hinge jamb
	Therma-Tru double bulb PVB door bottom	1 Row	Bottom rail
HARDWARE	Full mortise butt hinges	3	Hinge stile
	Lock assembly set	1	Lock stile
	Keeper	2	Keeper jamb
DRAINAGE	Sloped sill	1	Sill

N/A-Not Applicable

COMMENTS
Whether the tested door system utilizes wood or composite stile edges, the ratings would remain unchanged.

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LEAF LAYERS (OUTSIDE TO INSIDE)	LAYER DESCRIPTION (MATERIAL AND THICKNESS)
1	0.087" Fiberglass skin
2	1.510" Wood core
3	0.085" Fiberglass skin

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.976"
SPACER TYPE	Reinforced butyl

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.114"	0.748"	0.114"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Tempered	Air*	Tempered
LAMINATE MATERIAL	N/A	N/A	N/A

GLAZING METHOD	Channel
GLAZING MATERIAL	Foam tape
GLAZING FRAME MATERIAL	Vinyl

TOTAL WEIGHT (lbs)	**AVERAGE WEIGHT** (lbs/ft^2)
118	5.43

** - Stated per Client/Manufacturer, N/A-Not Applicable*

Photographs are included in Section 11.

The client did not supply a report drawing of the test specimen.

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SECTION 10

TEST RESULTS

I4812.01C DATA (INOPERABLE CONDITION)

SPECIMEN AREA	2.02 m²	**RECEIVE TEMP.**	22.1 °C	**SOURCE TEMP**	21.5 °C
TECHNICIAN	Daniel Poet	**RECEIVE HUMIDITY**	46%	**SOURCE HUMIDIT**	48%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	36.8	4.0	104	79	24	2.78	-
100	33.2	5.0	106	78	25	1.76	-
125	35.8	4.9	105	77	24	1.09	0
160	39.6	5.0	105	80	21	1.39	2
200	38.8	4.8	108	81	23	0.85	3
250	32.5	5.4	107	78	25	0.68	4
315	26.8	5.6	100	72	24	0.77	8
400	22.4	5.9	96	63	29	0.47	6
500	18.1	5.8	98	59	34	0.39	2
630	17.9	5.6	102	61	37	0.39	0
800	14.6	5.9	101	58	38	0.51	0
1000	10.9	6.1	97	54	39	0.53	0
1250	8.3	6.6	98	52	41	0.50	0
1600	6.9	7.1	102	55	42	0.55	0
2000	6.0	7.5	95	47	42	0.28	0
2500	5.9	8.5	94	45	43	0.35	0
3150	6.4	10.4	97	49	41	0.36	0
4000	7.3	12.8	95	54	34	0.31	6
5000	8.5	16.4	95	50	35	0.43	-
STC RATING		36	*(Sound Transmission Class)*				
DEFICIENCIES		31	*(Sum of Deficiencies)*				
OITC RATING		29	*(Outdoor-Indoor Transmission Class)*				

Notes: *1) Receive Room levels less than 5 dB above the Background levels are red.*
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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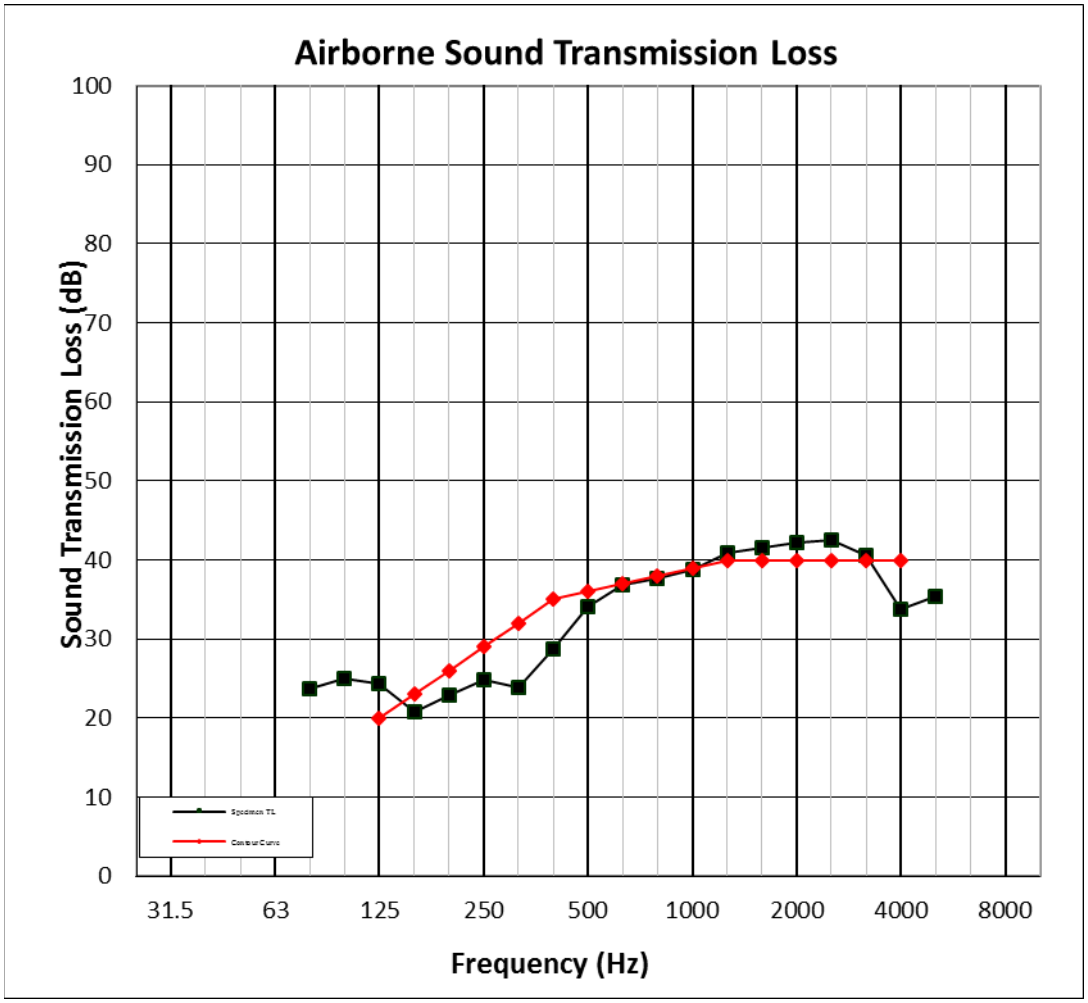
I4812.01C GRAPH (INOPERABLE CONDITION)



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I4812.01C4 DATA (OPERABLE CONDITION)

SPECIMEN AREA	2.02 m²	**RECEIVE TEMP.**	23.4 °C	**SOURCE TEMP**	22.9 °C
TECHNICIAN	Daniel Poet	**RECEIVE HUMIDITY**	49%	**SOURCE HUMIDIT**	48%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	38.7	4.2	105	80	23	1.73	-
100	35.6	5.3	106	78	25	2.06	-
125	37.0	5.0	105	77	25	0.97	0
160	38.9	4.5	106	81	21	1.32	0
200	38.0	4.7	108	82	23	0.78	1
250	32.9	5.3	107	78	25	0.79	2
315	27.1	5.5	100	72	24	0.60	6
400	22.8	5.8	96	63	29	0.42	4
500	18.7	5.9	98	60	33	0.25	1
630	18.6	5.8	102	62	35	0.18	0
800	15.7	6.0	101	61	35	0.45	1
1000	12.4	6.3	98	58	34	0.44	3
1250	10.2	6.8	98	57	36	0.45	2
1600	7.6	7.2	102	61	36	0.43	2
2000	6.5	7.6	96	52	38	0.26	0
2500	6.1	8.5	94	49	39	0.27	0
3150	6.7	10.0	97	51	39	0.22	0
4000	7.4	12.2	96	54	34	0.17	4
5000	8.5	15.5	95	51	35	0.32	-
STC RATING		34	*(Sound Transmission Class)*				
DEFICIENCIES		26	*(Sum of Deficiencies)*				
OITC RATING		29	*(Outdoor-Indoor Transmission Class)*				

Notes: *1) Receive Room levels less than 5 dB above the Background levels are red.*
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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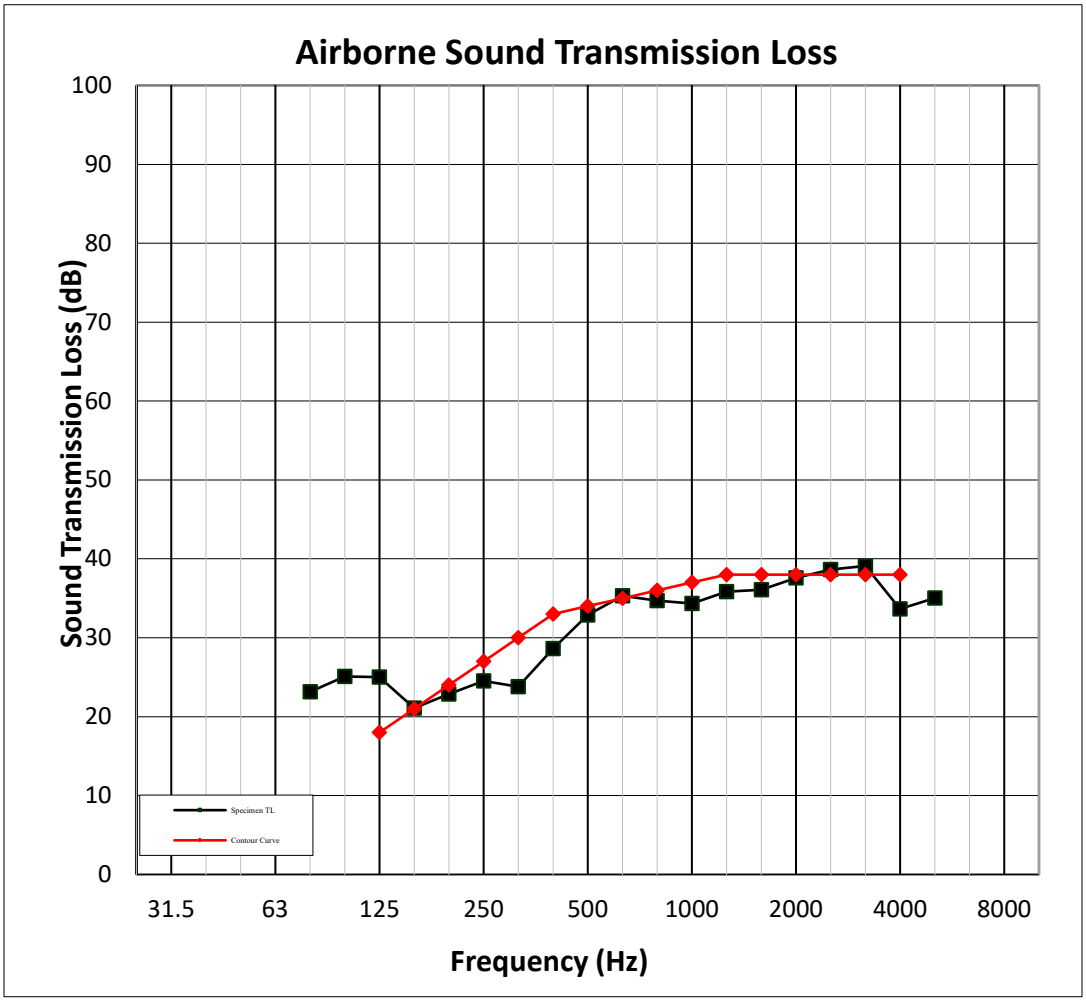

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SECTION 11
PHOTOGRAPHS

Photo No. 1
Receive Room View of Installed Specimen

Photo No. 2
Source Room View of Installed Specimen

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SECTION 12
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	07/03/18	N/A	Original Report Issue
1	04/12/22	3, 7	Added Comments
1	04/12/22	All	Reformatted and changed total number of pages from 13 to 14