



G0665.01-113-11-R1
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

FOAM SOLUTIONS INC

Series/Model: 4 mm Luxury Vinyl Plank over Foam Solutions Rubber Foam Pad

Specimen Type: 152 mm Concrete Slab with Drop Ceiling

Overall Size: 3023 mm by 3632 mm

STC 63
IIC 73

Test Specimen Identification:

Floor Topping: 4 mm Luxury Vinyl Plank

Floor Underlayment: 1.8 mm Foam Solutions Rubber Foam Pad

Floor Slab: 152 mm Concrete Slab

Main Beams: 43 mm Armstrong HD8906 Drywall Main Beam

Cross Tees: 37.3 mm Armstrong XL8945P Cross Tee

Insulation: 88.9 mm Johns Manville Kraft Faced R-13 Fiberglass Insulation

Ceiling: 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel

Reference should be made to Intertek-ATI Report G0665.01-113-11 for complete test specimen description. This page alone is not a complete report.

Acoustical Performance Test Report

FOAM SOLUTIONS INC
259 Steelcase Road West
Markham, Ontario L3R 2P6
CANADA

Report	G0665.01-113-11
Test Date	07/08/16
Report Date	07/13/16
Revision Date	07/26/16

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct airborne sound transmission loss and impact sound transmission tests. The complete test data is included as attachments to this report. The client provided the test specimen. The specimen was constructed on the date of testing.

Test Methods

The acoustical tests were conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

ASTM E 413-10, Classification for Rating Sound Insulation

ASTM E 492-09(2016)e1, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

ASTM E 989-06 (2012), Classification for Determination of Impact Insulation Class (IIC)

ASTM E 2235-04 (2012) Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

Test Procedure

All testing was conducted in the VT test chambers at Intertek-ATI located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The airborne transmission loss test was conducted in accordance with the ASTM E 90 test method using the single direction method. Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions. Four sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

Test Procedure (Continued)

The impact sound transmission test was conducted in accordance with the ASTM E 492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492, and five sound absorption measurements were conducted at each of five microphone positions.

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

Test Conditions

Source Room		Receive Room	
Average Temperature	21.8°C	Average Temperature	22.4°C
Average Relative Humidity	53%	Average Relative Humidity	61%

Test Calculations

The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E 413 and ASTM E 989, respectively.

Test Specimen Materials and Installation Details

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Luxury Vinyl Plank	914.4 by 152.4	4.0	N/A	10.98 m ²	7.52 kg/m ²
	<i>Note: Installed with releasable self-adhesive</i>				
Rubber Foam Pad	914 by 3048	1.8	Foam Solutions	10.98 m ²	0.76 kg/m ²
	<i>Note: Loose laid</i>				
Concrete Slab	3023 by 3632	152.0	N/A	10.98 m ²	366.18 kg/m ²
	<i>Note: The concrete slab was installed in a test frame flush to the source room.</i>				
Drywall Main Beam	38.1 by 2870	43.0	Armstrong HD8906	10.9 lin m	0.45 kg/m
	<i>Note: Twelve gauge hanger wires were attached to the bottom side of the concrete at twelve locations and then to the main beams. The hanger wire was twisted around itself a minimum of three times within 76 mm creating a 305 mm plenum. The measured steel thickness was 0.5 mm.</i>				
Cross Tee	38.3 by 1219	37.3	Armstrong XL8945P	27.2 lin m	0.45 kg/m
	<i>Note: Inserted into the main beams on 610 mm centers. The measured steel thickness is 0.5 mm.</i>				
Fiberglass Insulation	2962 by 584	88.9	Johns Manville Kraft Faced R-13	10.98 m ²	1.33 kg/m ²
	<i>Note: Loose laid onto the ceiling grid system</i>				

Test Specimen Materials and Installation Details (Continued)

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Gypsum Panel	3023 by 1219	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.56 m ²	11.23 kg/m ²
	<i>Note: Fastened with fine thread drywall screws on 305 mm centers</i>				

Comments

The total weight of the floor/ceiling assembly was 4261.9 kg. Intertek-ATI will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. A drawing of the test specimen is included in the attachments.

Intertek-ATI will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

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FOR INTERTEK-ATI:

Cody R. Snyder
Technician II - Acoustical Testing

Jordan Strybos
Project Manager - Acoustical Testing

Attachments (7 Pages): This report is complete only when all attachments are included.

* Stated by Client/Manufacturer

N/A - Non Applicable



Revision Log

Revision	Date	Page(s)	Description
R0	07/13/16	N/A	Original Report Issue
R1	07/26/16	Cover page, Page 1, Datasheets	Company name changed per client's request

Attachments

Instrumentation

Instrument	Manufacturer	Model	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	65124	06/16 *
Microphone Calibrator	Norsonic	1251	INT00127	01/16
Receive Room Microphone	PCB Piezotronics	378C20	65968	12/15
Receive Room Microphone	PCB Piezotronics	378C20	65586	02/16
Receive Room Microphone	PCB Electronics	378C20	INT00204	12/15
Receive Room Microphone	PCB Piezotronics	378C20	65969	12/15
Receive Room Microphone	PCB Piezotronics	378B20	65320	08/15
Receive Room Environmental Indicator	Comet	T7510	63810	10/15
			63811	10/15
Source Room Microphone	PCB Piezotronics	378B20	63738	05/16
Source Room Microphone	PCB Piezotronics	378B20	63739	05/16
Source Room Microphone	PCB Piezotronics	378B20	63740	05/16
Source Room Microphone	PCB Piezotronics	378B20	63742	05/16
Source Room Microphone	Scantek	378B20	63741	05/16
Source Room Environmental Indicator	Comet	T7510	63812	11/15
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	02/16

* The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

Test Chambers

VT Receive Room Volume	155.77 m ³
VT Source Room Volume	190 m ³



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AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90



Test Date	07/08/16
Data File No.	G0665.01
Client	Foam Solutions Inc
Description	4 mm Luxury Vinyl Plank, 1.8 mm Foam Solutions Rubber Foam Pad, 152 mm Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Kraft Faced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Cody R. Snyder

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	42.7	16.5	107	67	40	3.90	-
100	31.9	12.2	105	67	39	1.20	-
125	30.9	9.3	105	65	41	1.60	6
160	25.6	8.7	107	65	44	1.70	6
200	23.3	10.0	103	56	48	1.10	5
250	23.7	9.8	103	53	52	1.20	4
315	22.1	9.5	105	51	55	1.10	4
400	20.6	7.8	103	49	57	0.70	5
500	21.5	7.2	103	44	61	0.60	2
630	20.4	7.1	104	42	64	0.70	0
800	19.6	7.0	104	40	67	0.70	0
1000	17.5	7.0	103	40	67	0.50	0
1250	16.6	7.2	104	39	68	0.60	0
1600	14.7	7.3	104	38	69	0.60	0
2000	11.6	8.0	103	37	68	0.50	0
2500	8.0	8.8	102	36	68	0.60	0
3150	5.8	9.5	103	33	71	0.60	0
4000	5.7	10.7	103	32	72	0.70	0
5000	5.6	12.1	103	31	72	0.80	-
6300	5.9	15.1	97	27	69	0.80	-
8000	6.3	19.5	96	20	76	0.90	-
10000	6.5	24.4	92	11	78	0.80	-

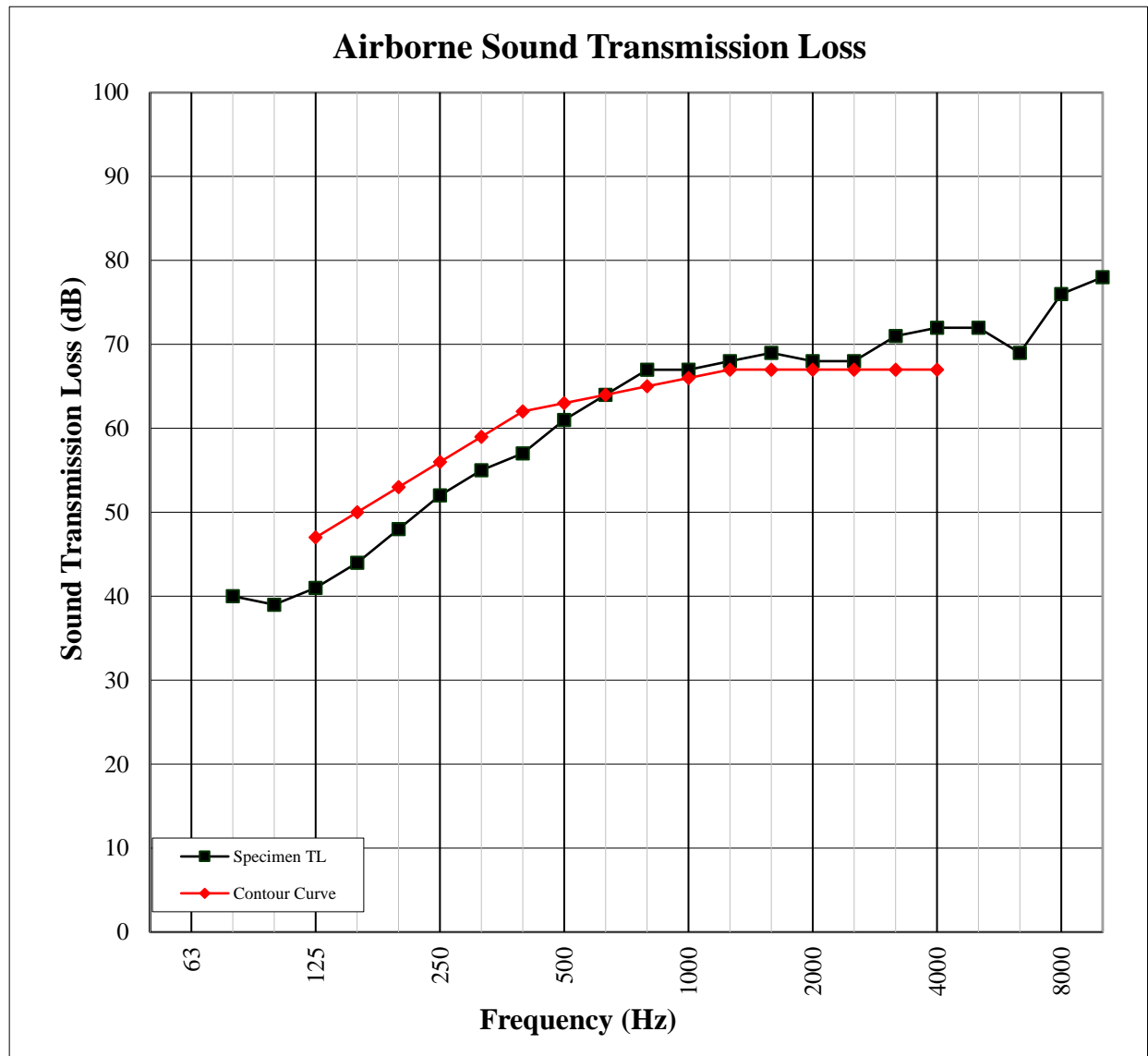
STC Rating **63** (*Sound Transmission Class*)

Deficiencies **32** (*Sum of Deficiencies*)

- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
 - 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

AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	07/08/16
Data File No.	G0665.01
Client	Foam Solutions Inc
Description	4 mm Luxury Vinyl Plank, 1.8 mm Foam Solutions Rubber Foam Pad, 152 mm Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Kraft Faced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Cody R. Snyder





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IMPACT SOUND TRANSMISSION
ASTM E 492

Test Date	07/08/16
Data File No.	G0665.01
Client	Foam Solutions Inc
Description	4 mm Luxury Vinyl Plank, 1.8 mm Foam Solutions Rubber Foam Pad, 152 mm Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Kraft Faced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Cody R. Snyder

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Normalized Impact SPL (dB)	95% Confidence Limit	Number of Deficiencies
80	43.9	16.6	46	2.6	-
100	33.9	10.9	47	1.8	8
125	31.6	9.8	45	1.4	6
160	26.9	8.3	43	1.2	4
200	25.3	10.7	45	1.8	6
250	24.1	9.5	44	1.0	5
315	22.5	9.4	39	1.1	0
400	20.6	7.9	36	0.9	0
500	22.6	7.2	28	0.7	0
630	20.3	7.1	25	0.7	0
800	19.3	6.9	23	0.7	0
1000	18.9	6.9	19	0.4	0
1250	18.0	7.2	15	0.4	0
1600	15.7	7.2	13	0.3	0
2000	12.3	8.0	11	0.3	0
2500	8.4	8.8	7	0.3	0
3150	6.0	9.6	4	0.3	0
4000	5.8	10.8	5	0.4	-
5000	5.7	12.2	5	0.5	-
6300	5.9	15.2	6	0.7	-
8000	6.2	19.3	7	0.8	-
10000	6.5	24.3	9	0.8	-

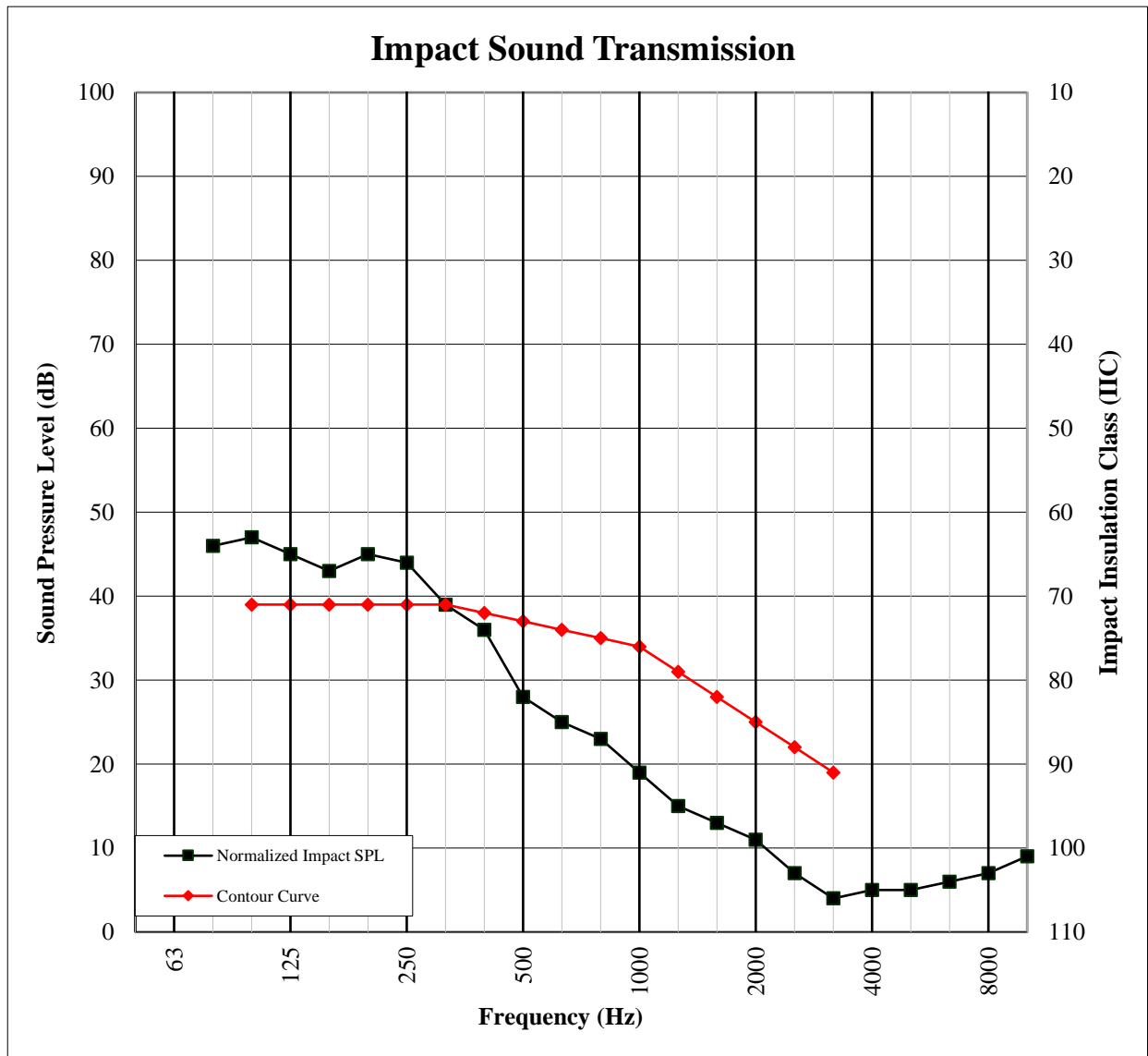
IIC Rating **73** *(Impact Insulation Class)*

Deficiencies **29** *(Sum of Deficiencies)*

Note: *Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.*

IMPACT SOUND TRANSMISSION
ASTM E 492

Test Date	07/08/16
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Client	Foam Solutions Inc
Description	4 mm Luxury Vinyl Plank, 1.8 mm Foam Solutions Rubber Foam Pad, 152 mm Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Kraft Faced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel
Specimen Area	10.98 m ²
Technician	Cody R. Snyder



Photographs

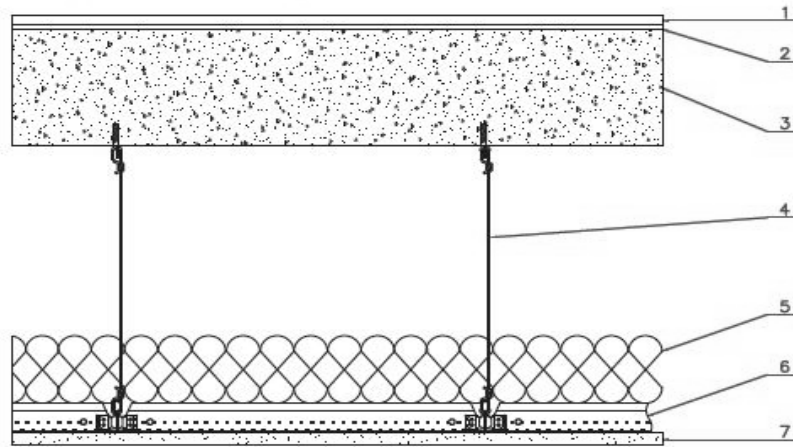


Source Room View of Test Specimen Installation



Receive Room View of Test Specimen Installation

Drawing



- 1-Floor Topping
- 2-Underlayment
- 3-Concrete Slab
- 4-Hanger Wire
- 5-Insulation
- 6-Ceiling Grid
- 7-Ceiling