

ACOUSTIK ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON ENGINEERED WOOD OVER 10 MM
ACOUSTIK ACOUSTICAL RUBBER UNDERLAYMENT

SPECIMEN TYPE

152 mm Concrete Slab with Suspended Ceiling

REPORT NUMBER

N1962.16-113-11-R0

TEST DATE

01/05/22

ISSUE DATE

01/19/22

RECORD RETENTION END

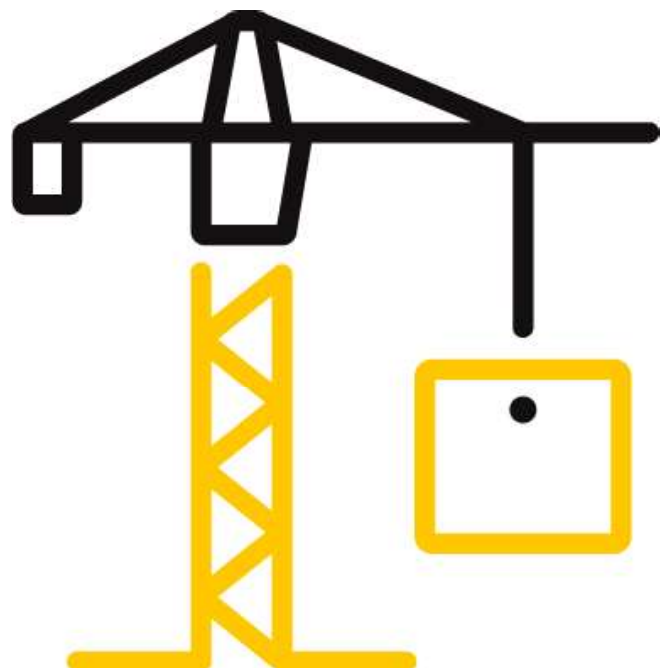
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DOCUMENT CONTROL

ATI 00629 (03/21/18)
RTTDS-R-AMER-Test-2844
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TEST REPORT FOR ACOUSTIK

Report No.: N1962.16-113-11-R0

Date: 01/19/22

REPORT RENDERED BY MANUFACTURER FOR

ACOUSTICAL SURFACES INC.

123 Columbia Court N.

Chaska, Minnesota 55318

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by the client to perform testing in accordance with ASTM E90 AND ASTM E492 on Engineered Wood over 10 mm ACOUSTIK Acoustical Rubber Underlayment. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted in the VT 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.

SECTION 2

SUMMARY OF TEST RESULTS

DATA FILE NO.	N1962.16
SERIES/MODEL:	Engineered Wood over 10mm ACOUSTIK Acoustical Rubber Underlayment
STC	62
IIC	66
HIIC	76

COMPLETED BY: Corey S. Kohler
Technician - Acoustical

TITLE: Testing

SIGNATURE: 
Digitally Signed by: Corey Kohler

DATE: 01/19/22

COMPLETED BY: Daniel B. Mohler
Project Lead - Acoustical

TITLE: Testing

SIGNATURE: 
Digitally Signed for: Daniel Mohler by Jordan Strybos

DATE: 01/19/22

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SECTION 3

TEST METHODS

The specimen was evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E492-09(2016)e1, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM E989-21, *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2020), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

ASTM E3222-20, *Standard Classification for Determination of High-Frequency Impact Sound Ratings*

SECTION 4

MATERIAL SOURCE/INSTALLATION

The full test specimen was assembled on the day of testing by B&C. All materials provided by the client were installed on an existing B&C assembly (152 mm Concrete Slab with Suspended Ceiling) utilizing B&C-supplied materials. The assembly was installed in a steel test frame which was installed into the opening between the source and receive rooms in the test chamber. The test frame was isolated from the structure with dense neoprene gasket.

The total weight of the floor/ceiling assembly was 4334.7 kg. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. A drawing of the test specimen is included in the report.

B&C 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 B&C for the entire test record retention period.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

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SECTION 5 EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02572	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02574	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02575	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02576	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02577	05/21	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02578	05/21	*
2-Channel Analog Output	National Instruments	NI 9260	2-Channel Analog Input	INT02573	05/21	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	10/21	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63745	09/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	07/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	10/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT01089	02/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00652	02/21	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/21	
				63811	10/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65969	04/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	03/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63741	07/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63740	04/21	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63739	04/21	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	10/21	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	02/21	

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

VT RECEIVE ROOM VOLUME	155.77 m ³
VT SOURCE ROOM VOLUME	190 m ³

SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Morgan S. J. Kennedy	Intertek B&C
Daniel B. Mohler	Intertek B&C

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SECTION 7

TEST PROCEDURE

The microphones were calibrated before conducting the tests. The air temperature and relative humidity conditions were monitored and recorded during all measurements. The average temperature and humidity of both the source and receive rooms are listed in Sections 10 and 11. The maximum and minimum temperatures and humidities of the receive room from the duration of the test are listed in Sections 12 and 13.

The airborne transmission loss test was conducted in accordance with the ASTM E90 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. Two sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

The impact sound transmission test was conducted in accordance with the ASTM E492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E492, and five sound absorption measurements were conducted at each of five microphone positions.

Detailed test procedures, data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

SECTION 8

TEST CALCULATIONS

The STC (Sound Transmission Class), IIC (Impact Insulation Class), and HIIC (High-Frequency Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, and ASTM E3222, respectively.

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SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Flooring	127 by Varied	9.0	Engineered Wood	10.98 m ²	7.67 kg/m ²
	Note: Loose laid				
Acoustical Rubber Underlayment	3023 by 1219.2	10.0	ACOUSTIK m ²	10.98	7.27 kg/m ²
	Note: Loose laid				
Concrete Slab	3023 by 3632	152.4	5000 PSI	10.98 m ²	366.18 kg/m ²
	Note: Installed in a test frame flush to the source room. Mats of #5 reinforcing bars were placed 25.4 mm from both the top and bottom of the slab, with bars spaced on 305 mm centers in both directions. No noticeable shrinkage or cracking was visible on the specimen.				
Drywall Main Beam	38.1 by 2870	43.0	Armstrong HD8906	10.9 lin m	0.45 kg/m
	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.				
Cross Tee	38.3 by 1219	37.3	Armstrong XL8945P	27.2 lin m	0.45 kg/m
	Note: Inserted into the main beams on 610 mm centers. The measured steel thickness was 0.5 mm.				
Fiberglass Insulation	609.6 by 2438	88.9	Johns Manville Unfaced R-13	10.98 m ²	1.32 kg/m ²
	Note: Loose laid onto the ceiling grid system				
Gypsum Panel	3023 by 1219	15.9	National Gypsum Gold Bond® Fire-Shield® Type X	10.56 m ²	11.23 kg/m ²
	Note: Fastened with 25.4 mm fine thread drywall screws on 305 mm centers. Seams and perimeter sealed with Pecora AC-20® Acoustical Sealant and covered with pressure-sensitive tape.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	17.1°C	Source Temp.	16.6°C
TECHNICIAN	MSJK	Receive Humidity	45%	Source Humidity	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
50	35.4	22.3	99	61	36	3.0	-
63	34.5	14.0	98	61	37	3.7	-
80	34.7	14.4	94	62	31	3.1	-
100	25.5	8.8	97	61	38	2.0	-
125	23.5	8.6	101	62	41	2.0	5
160	22.0	8.0	99	60	42	0.9	7
200	19.1	9.1	99	53	48	1.5	4
250	15.7	9.1	102	53	51	1.1	4
315	19.4	9.3	106	57	51	1.3	7
400	17.8	7.8	108	54	56	1.4	5
500	17.8	7.4	106	47	62	1.1	0
630	18.7	7.5	107	44	65	0.7	0
800	17.5	7.4	107	43	67	0.8	0
1000	18.8	7.5	106	41	68	0.7	0
1250	14.0	7.7	105	39	69	0.5	0
1600	11.0	8.0	105	38	69	0.5	0
2000	10.0	9.1	105	38	69	0.6	0
2500	8.3	10.3	102	34	69	0.5	0
3150	7.8	11.3	102	31	72	0.8	0
4000	8.3	12.9	102	28	74	1.0	0
5000	9.0	15.2	101	23	77	1.2	-
6300	9.7	19.0	98	16	81	1.2	-
8000	10.4	24.6	98	13	82	1.1	-
10000	11.0	24.6	96	11	82	1.0	-
STC Rating	62	<i>(Sound Transmission Class)</i>			Sum of Deficiencies	32	

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

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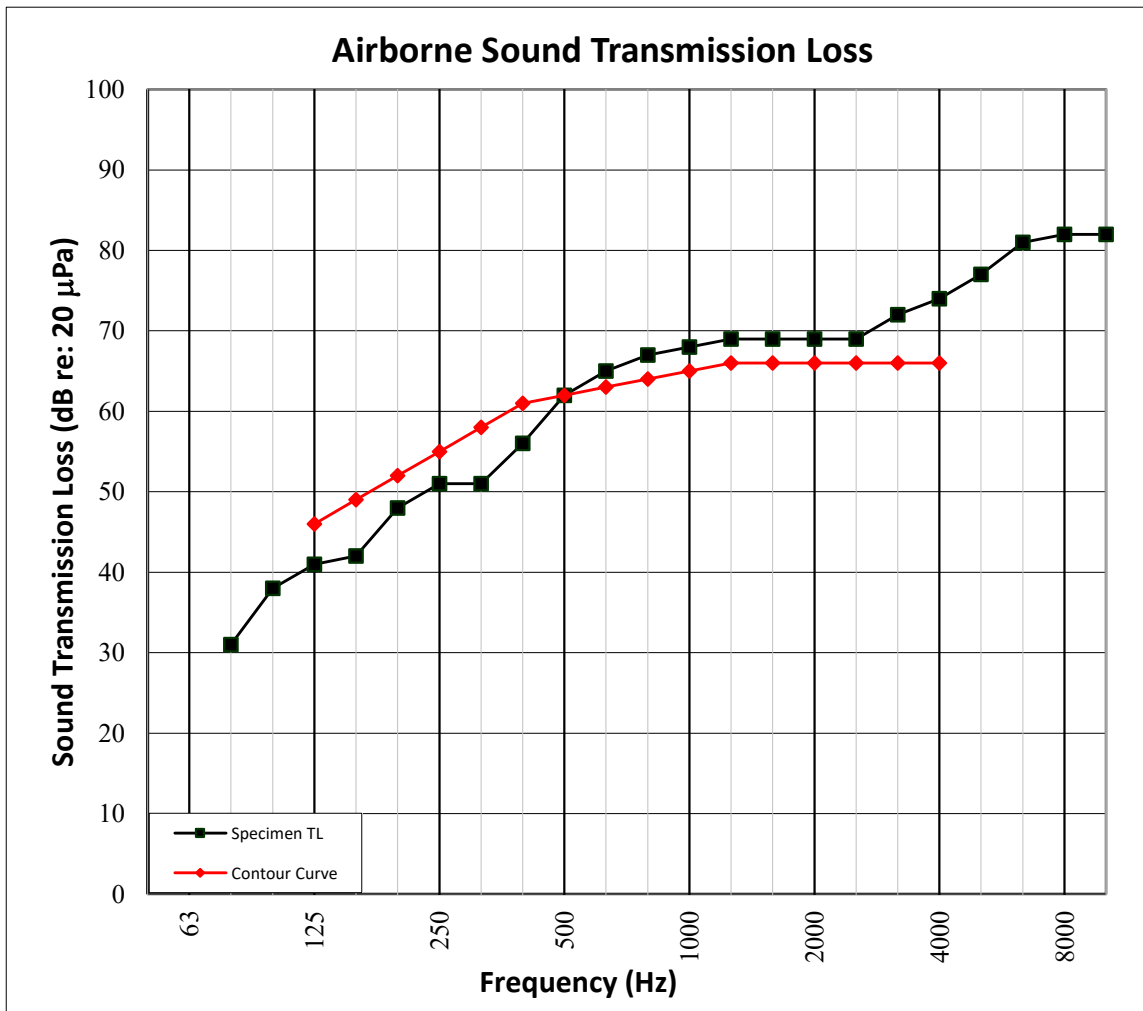
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	17.1°C	Source Temp.	16.6°C
TECHNICIAN	MSJK	Receive Humidity	45%	Source Humidity	45%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.1°C	Minimum Temp.	17.1°C
TECHNICIAN	MSJK	Max. Humidity	45%	Min. Humidity	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	29.9	14.1	48	1.4	-
100	25.6	8.7	50	1.3	4
125	23.7	8.9	47	1.6	1
160	21.1	7.8	50	0.8	4
200	17.6	9.1	52	1.0	6
250	16.0	9.4	53	0.6	7
315	18.3	8.9	52	0.8	6
400	16.1	7.9	48	0.7	3
500	16.7	7.4	39	0.7	0
630	17.2	7.4	35	0.7	0
800	18.1	7.3	27	0.5	0
1000	22.1	7.6	23	0.5	0
1250	14.1	7.8	21	0.5	0
1600	11.3	8.1	19	0.5	0
2000	10.6	9.0	17	0.6	0
2500	8.3	10.2	15	0.8	0
3150	7.9	11.4	12	0.5	0
4000	8.2	12.9	9	0.8	-
5000	9.0	15.0	9	1.0	-
6300	9.7	19.0	11	1.0	-
8000	10.4	24.7	12	1.0	-
10000	11.0	24.7	13	1.1	-
IIC Rating	66	(Impact Insulation Class)		Sum of Deficiencies	31

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

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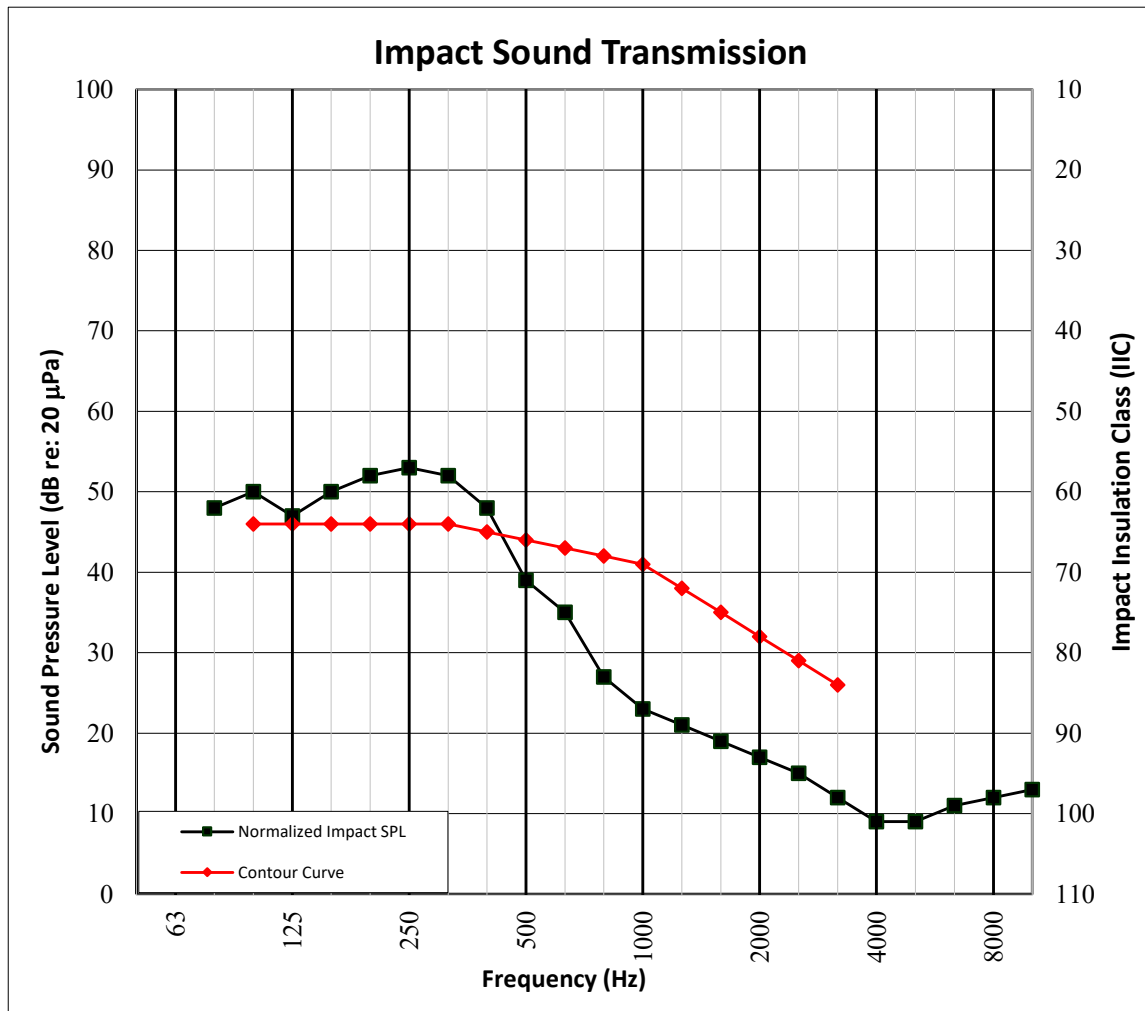
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.1°C	Minimum Temp.	17.1°C
TECHNICIAN	MSJK	Max. Humidity	45%	Min. Humidity	45%



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SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.1°C	Minimum Temp.	17.1°C
TECHNICIAN	MSJK	Max. Humidity	45%	Min. Humidity	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
400	16.1	7.9	48	0.7	12.6
500	16.7	7.4	39	0.7	4.9
630	17.2	7.4	35	0.7	2.4
800	18.1	7.3	27	0.5	0.0
1000	22.1	7.6	23	0.5	0.0
1250	14.1	7.8	21	0.5	0.0
1600	11.3	8.1	19	0.5	0.0
2000	10.6	9.0	17	0.6	0.0
2500	8.3	10.2	15	0.8	0.0
3150	7.9	11.4	12	0.5	0.0
HIIC Rating	76	<i>(High-Frequency Impact Insulation Class)</i>		Sum of Deficiencies	19.9

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

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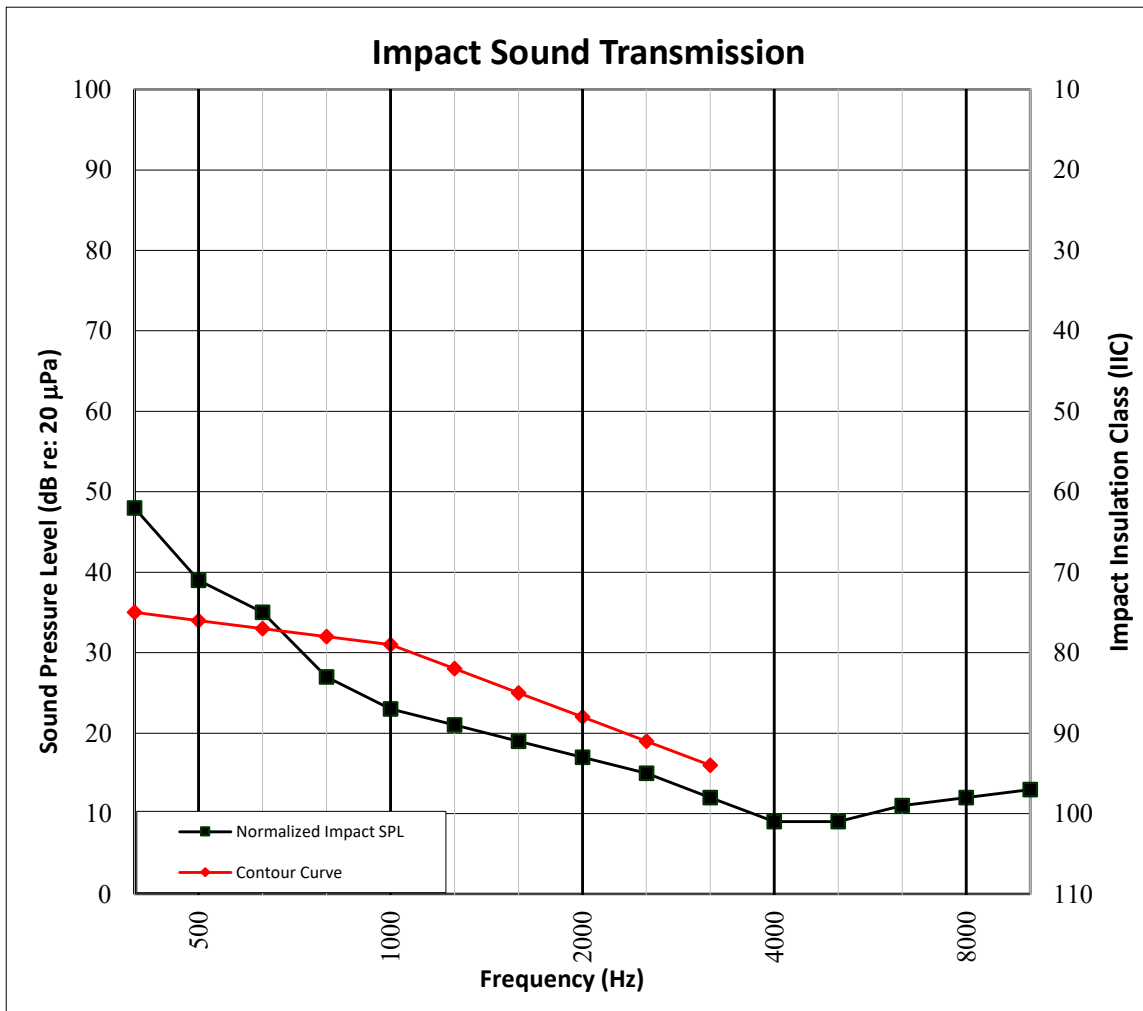
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SECTION 15

TEST RESULTS -HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	1/5/2022				
DATA FILE NO.	N1962.16				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	9 mm Engineered Wood Flooring, 10 mm ACOUSTIK Acoustical Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab, 43 mm Armstrong HD8906 Drywall Main Beam, 37.3 mm Armstrong XL8945P Cross Tee, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 15.9 mm National Gypsum Gold Bond® Fire-Shield® Type X Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.1°C	Minimum Temp.	17.1°C
TECHNICIAN	MSJK	Max. Humidity	45%	Min. Humidity	45%



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SECTION 16

PHOTOGRAPHS



Photo No. 1

Source Room View of Test Specimen Installation



Photo No. 2

Receive Room View of Test Specimen Installation

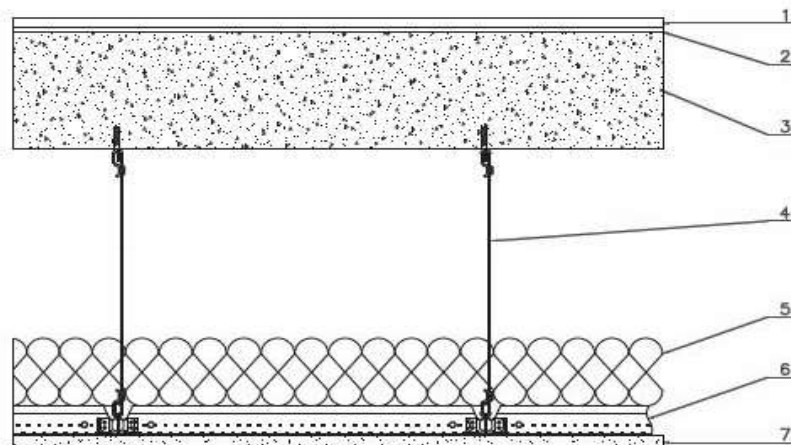
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SECTION 17

DRAWING



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



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SECTION 18

REVISION LOG

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