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VICONIC HEALTH ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90, ASTM E492, AND ASTM E2179 TESTING ON 2.2 MM COMMERCIAL SHEET FLOORING OVER 11 MM VICONIC SAFETY FLOORING™ UNDERLAYMENT

SPECIMEN TYPE
Concrete Slab - 152 mm

REPORT NUMBER
N6747.05-113-11-R0

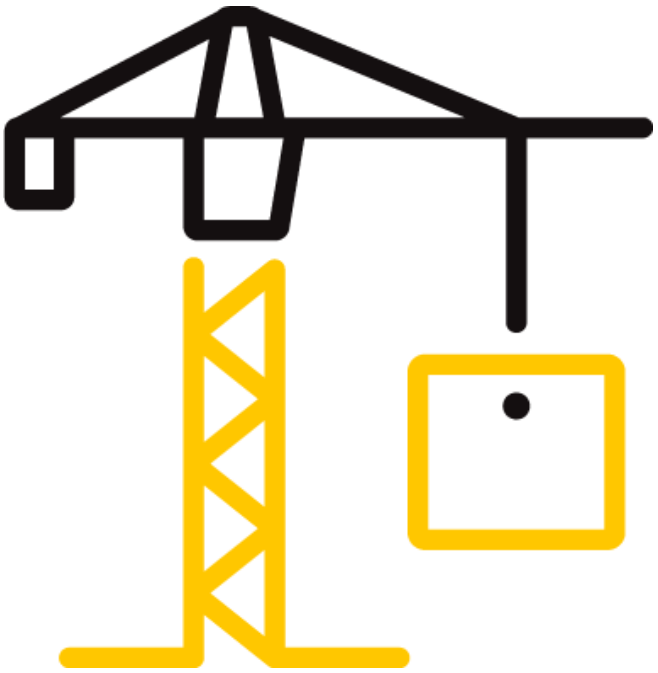
TEST DATE
05/01/22

ISSUE DATE
05/06/22

RECORD RETENTION END
05/01/26

PAGES
17

DOCUMENT CONTROL
RTTDS-R-AMER-Test-2844 (03/23/22)



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TEST REPORT FOR VICONIC HEALTH
Report No.: N6747.05-113-11-R0
Date: 05/06/22

REPORT ISSUED TO

VICONIC HEALTH
1100 Oakwood Boulevard
Dearborn, Michigan 48124

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Viconic Health to perform testing in accordance with ASTM E90, ASTM E492, AND ASTM E2179 on 2.2 mm Commercial Sheet Flooring over 11 mm VICONIC SAFETY FLOORING™ 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.	N6747.01
SERIES/MODEL:	2.2 mm Commercial Sheet Flooring over 11 mm VICONIC SAFETY FLOORING™ Underlayment
STC	50
IIC	57
ΔIIC	25
HIIC	63
ΔHIIC	33

COMPLETED BY:	Morgan S. J. Kennedy	**COMPLETED BY:**	Daniel B. Mohler
TITLE:	Technician - Acoustical Testing	**TITLE:**	Project Lead - Acoustical Testing
SIGNATURE:	Digitally Signed by: Morgan Kennedy	**SIGNATURE:**	Digitally Signed by: Daniel Mohler
DATE:	05/06/22	**DATE:**	05/06/22

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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 E2179-21, *Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors*

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 (Concrete Slab - 152 mm) 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 4081.1 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	63744	09/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65968	01/22	
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	65103	02/22	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64902	12/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63741	07/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	04/22	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	64906	04/22	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	10/21	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	02/22	

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

VT RECEIVE ROOM VOLUME	158.86 m^3
VT SOURCE ROOM VOLUME	190 m^3

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Michael A. Unnone	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 through 15.

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.

The delta impact insulation test was conducted in accordance with ASTM E2179 test method. In addition to the impact sound transmission test, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E492 with only the concrete slab installed were conducted at each of five microphone positions.

The details of this construction are noted as proprietary per the customer's request. Reference should be made to Intertek-ATI Report N6747.01-113-11 for detailed information on the specific construction.

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), HIIC (High-Frequency Impact Insulation Class), and ΔIIC (Delta Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, ASTM E3222, and ASTM E2179, respectively.

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SECTION 9
TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Commercial Sheet Flooring	1828.8 by 3632	2.2	N/A	10.98 m²	3.42 kg/m²
	Note: Adhered to the underlayment with the manufacturer's adhesive using a 0.79 mm by 1.59 mm by 0.79 mm trowel. Adhesive was allowed to cure per manufacturer's specifications.				
Underlayment	774.7 by 1524	11.0	VICONIC SAFETY FLOORING™	10.98 m²	2.1 kg/m²
	Note: Loose laid				
Concrete Slab	3023 by 3632	152.4	5000 PSI	10.98 m²	366.18 kg/m²
	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.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	16°C	**Source Temp.**	16.8°C
TECHNICIAN	MAU	**Receive Humidity**	54%	**Source Humidity**	54%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
50	29.8	24.1	107	68	37	5.1	-
63	27.4	19.2	106	67	37	5.5	-
80	30.3	13.8	101	67	34	3.5	-
100	22.3	10.5	98	64	35	1.5	-
125	23.8	8.3	100	62	40	2.6	0
160	18.7	8.7	97	62	37	1.6	0
200	14.3	9.5	95	56	39	1.5	1
250	11.6	9.1	97	54	44	1.0	0
315	12.5	10.2	100	58	42	1.2	4
400	8.8	8.7	99	59	41	0.9	8
500	11.7	8.2	97	49	49	0.5	1
630	14.2	7.6	97	44	55	0.7	0
800	13.5	8.2	97	40	59	0.9	0
1000	14.3	7.9	97	36	63	0.6	0
1250	12.9	7.8	96	34	64	0.5	0
1600	9.5	8.2	97	34	65	0.3	0
2000	7.8	9.1	96	31	67	0.4	0
2500	6.6	10.2	92	25	68	0.4	0
3150	6.2	11.5	92	21	71	0.6	0
4000	6.7	13.0	92	19	73	0.6	0
5000	7.4	15.0	89	13	76	0.5	-
6300	8.3	18.6	86	8	77	1.0	-
8000	9.0	24.3	87	8	76	1.3	-
10000	9.3	24.3	85	8	74	1.6	-
STC Rating	**50**	*(Sound Transmission Class)*			**Sum of Deficiencies**		**14**

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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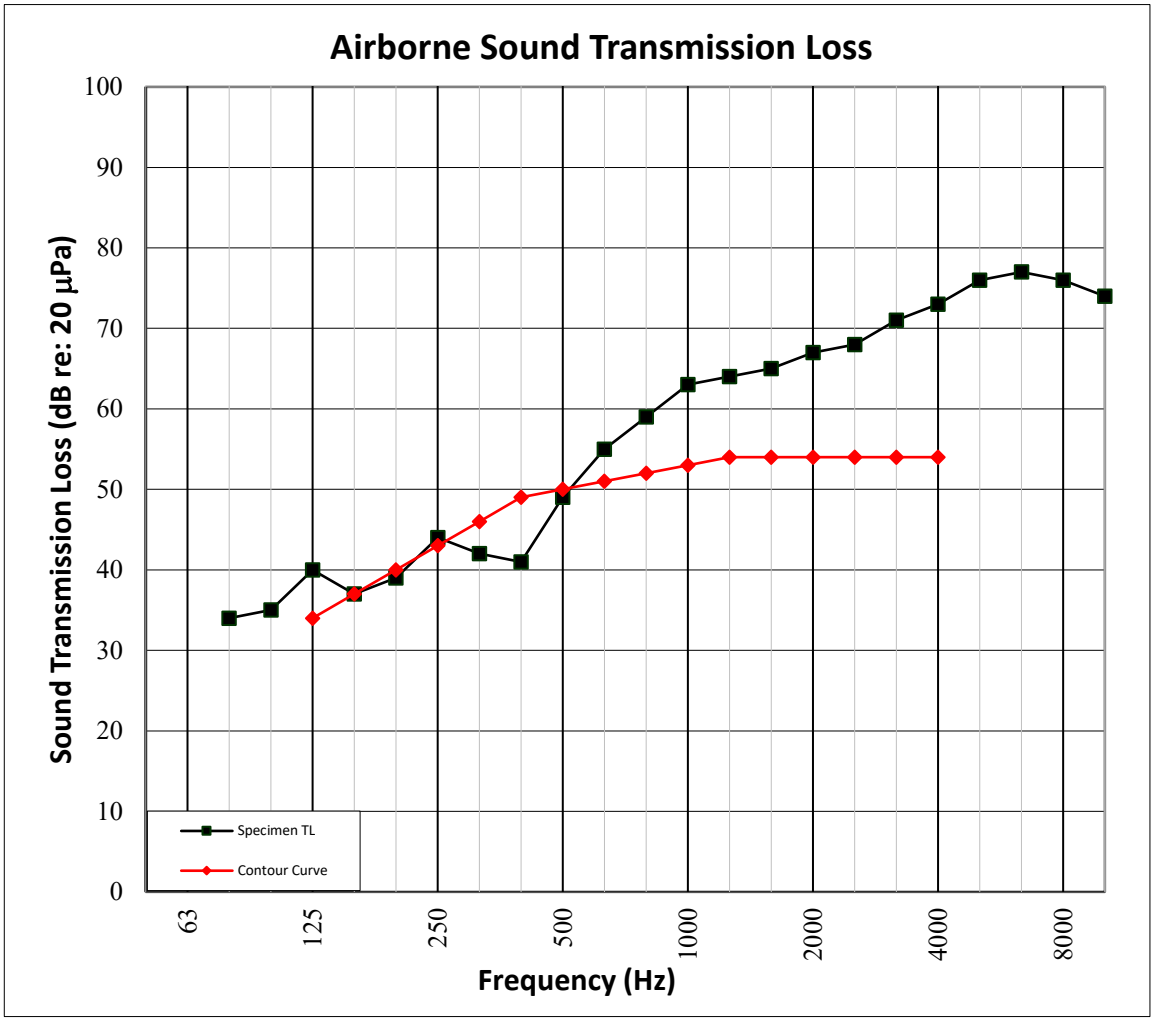
SECTION 11
TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	16°C	**Source Temp.**	16.8°C
TECHNICIAN	MAU	**Receive Humidity**	54%	**Source Humidity**	54%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** (dB)	**95% SAMPLING LIMIT**	**NUMBER OF DEFICIENCIES**
80	30.1	14.1	56	2.7	-
100	24.5	10.0	56	1.3	1
125	21.6	8.6	57	1.1	2
160	17.6	9.4	60	0.7	5
200	15.9	9.0	63	0.9	8
250	12.3	9.4	60	0.5	5
315	12.5	9.9	59	0.5	4
400	9.0	8.7	58	0.4	4
500	13.3	8.1	54	0.4	1
630	12.1	7.7	48	0.3	0
800	14.2	8.0	37	0.5	0
1000	15.1	7.9	30	0.4	0
1250	12.8	7.9	27	0.4	0
1600	9.4	8.3	24	0.4	0
2000	7.9	9.3	22	0.5	0
2500	6.7	10.1	19	0.6	0
3150	6.2	11.4	17	0.7	0
4000	6.7	12.9	13	0.8	-
5000	7.4	14.9	10	0.7	-
6300	8.3	18.7	10	0.8	-
8000	9.0	24.0	11	0.9	-
10000	9.4	24.0	11	0.9	-
IIC Rating	**57**	*(Impact Insulation Class)*		**Sum of Deficiencies**	**30**

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

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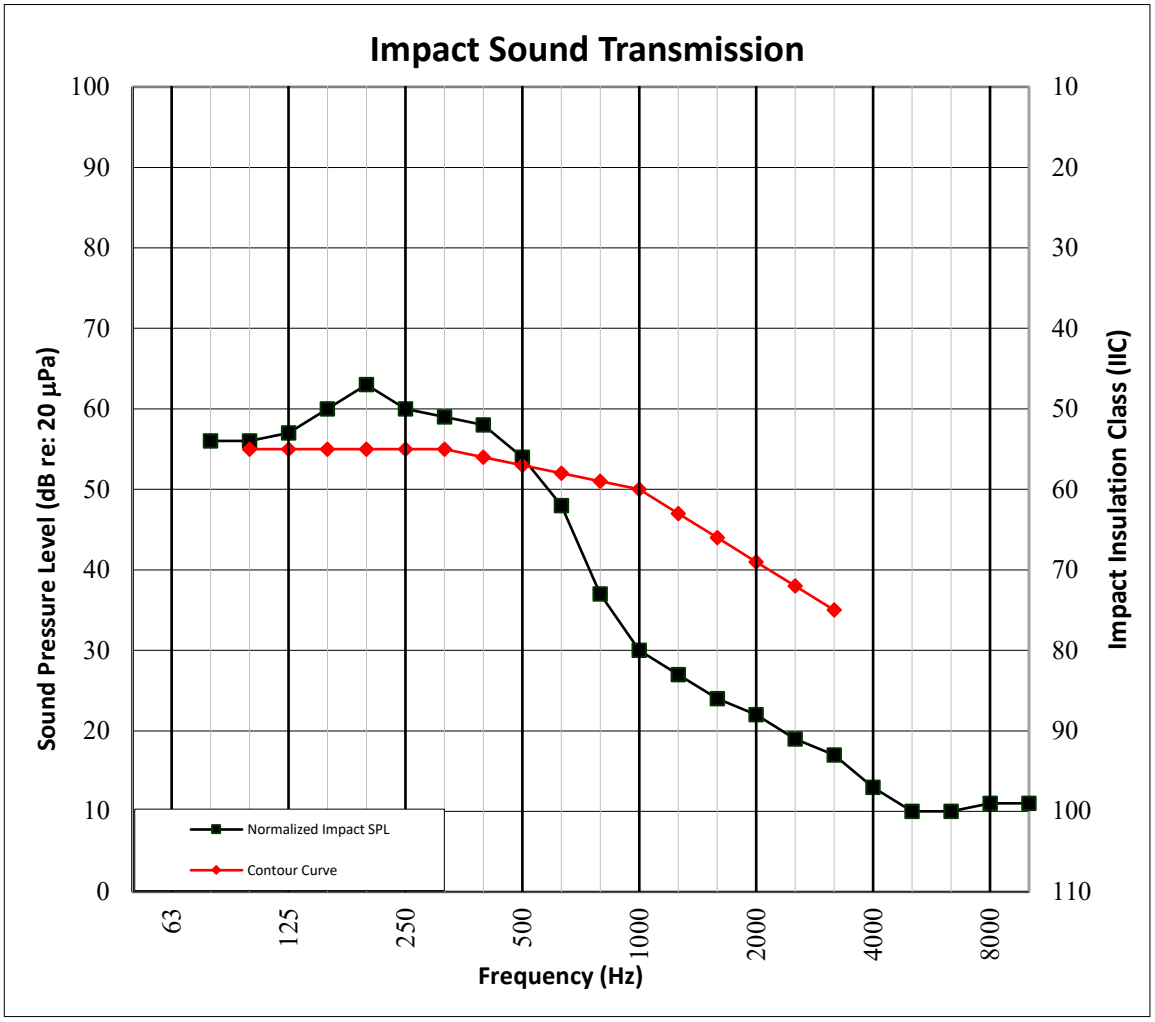
SECTION 13
TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%



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SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** (dB)	**95% SAMPLE CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
400	9.0	8.7	58	0.4	10.2
500	13.3	8.1	54	0.4	6.5
630	12.1	7.7	48	0.3	2.1
800	14.2	8.0	37	0.5	0.0
1000	15.1	7.9	30	0.4	0.0
1250	12.8	7.9	27	0.4	0.0
1600	9.4	8.3	24	0.4	0.0
2000	7.9	9.3	22	0.5	0.0
2500	6.7	10.1	19	0.6	0.0
3150	6.2	11.4	17	0.7	0.0
HIIC Rating	**63**	*(High-Frequency Impact Insulation Class)*		**Sum of Deficiencies**	**18.8**

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

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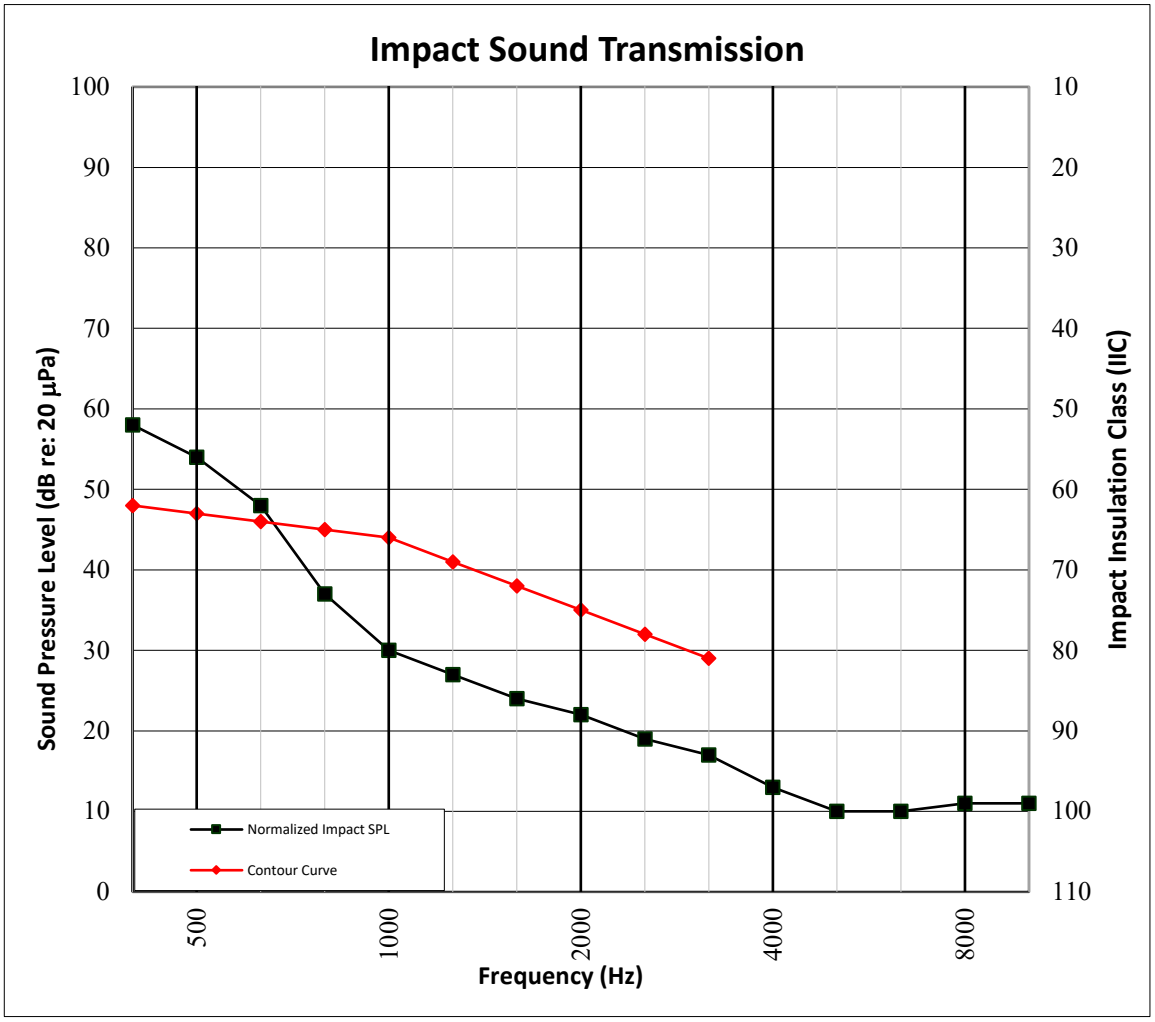
SECTION 15
TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%



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TEST REPORT FOR VICONIC HEALTH

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SECTION 16

TEST RESULTS - DELTA IMPACT INSULATION

IAS ACCREDITED Testing Laboratory

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** BARE (dB)	**95% CONF LIMIT**	**NORMALIZED IMPACT SPL** SPEC (dB)	**95% SAMPL LIMIT**	**RESULT ARRAY** $L_{ref,c}$	**NUMBER OF DEFI-CIENCIES**
100	24.5	10.0	58.1	1.7	56.3	1.6	65.0	6
125	21.6	8.6	59.4	1.3	57.1	1.4	65.0	6
160	17.6	9.4	62.9	0.9	60.3	0.9	65.0	6
200	15.9	9.0	66.8	0.9	63.1	1.1	65.0	6
250	12.3	9.4	65.9	0.5	60.1	0.6	63.0	4
315	12.5	9.9	67.6	0.6	59.5	0.6	61.0	2
400	9.0	8.7	68.1	0.5	58.2	0.5	60.0	2
500	13.3	8.1	68.1	0.5	53.5	0.5	56.0	0
630	12.1	7.7	69.2	0.4	48.1	0.4	50.0	0
800	14.2	8.0	71.0	0.6	37.1	0.6	38.0	0
1000	15.1	7.9	70.8	0.6	30.2	0.5	31.0	0
1250	12.8	7.9	70.9	0.5	27.2	0.5	28.0	0
1600	9.4	8.3	71.4	0.5	23.7	0.5	24.0	0
2000	7.9	9.3	71.4	0.6	21.8	0.7	22.0	0
2500	6.7	10.1	71.3	0.8	19.1	0.7	20.0	0
3150	6.2	11.4	70.2	0.8	16.6	0.8	18.0	0

ΔIIC Rating	**25**	*(Delta Impact Insulation Class)*	**Sum of Deficiencies**	**32**
ΔHIIC Rating	**33**	*(Delta High-Frequency Impact Insulation Class)*	**Sum of Deficiencies**	**19**

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

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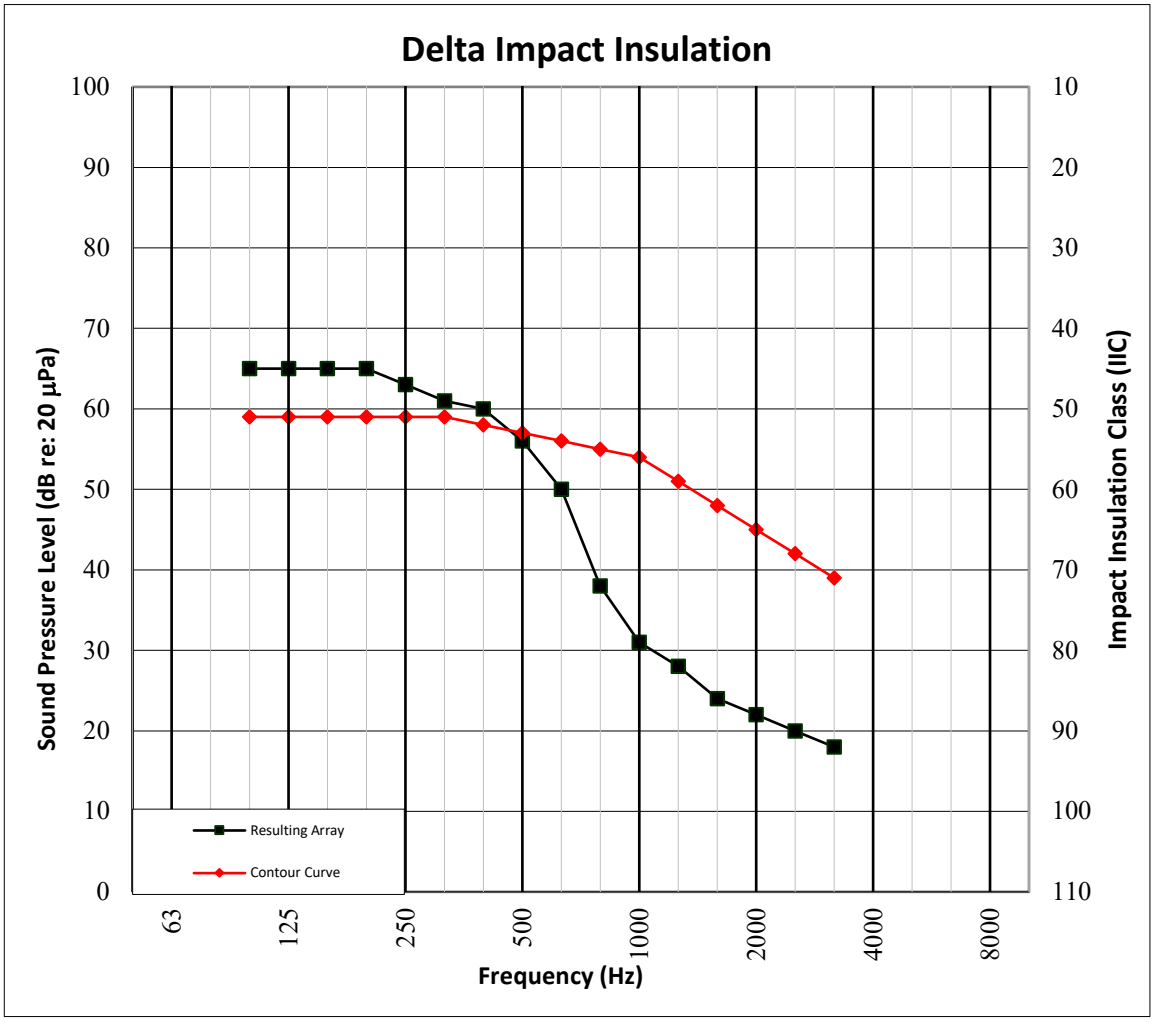
SECTION 17
TEST RESULTS - DELTA IMPACT INSULATION GRAPH

TEST DATE	5/1/2022				
DATA FILE NO.	N6747.01				
CLIENT	Viconic Health				
DESCRIPTION	2.2 mm Commercial Sheet Flooring, 11 mm VICONIC SAFETY FLOORING™ Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	16°C	**Minimum Temp.**	15.9°C
TECHNICIAN	MAU	**Max. Humidity**	54%	**Min. Humidity**	54%



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SECTION 18
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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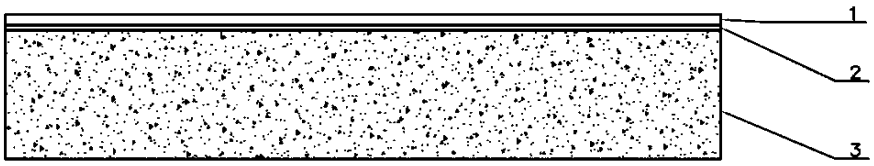
SECTION 19
DRAWING



1-Floor Topping
2-Underlayment
3-Concrete Slab

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SECTION 20
REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	05/06/22	N/A	Original Report Issue