

LATICRETE INTERNATIONAL ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90, ASTM E492, AND ASTM E2179 TESTING ON
CERAMIC TILE OVER LATICRETE 170 5 MM RUBBER UNDERLAYMENT

SPECIMEN TYPE

Concrete Slab - 152 mm

REPORT NUMBER

S8152.03-113-11-R0

TEST DATE

07/23/25

ISSUE DATE

08/29/25

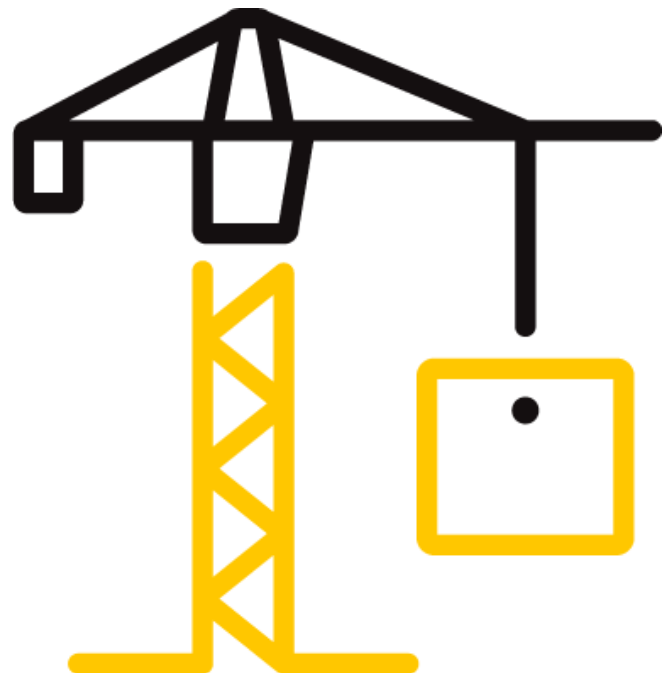
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TEST REPORT FOR LATICRETE INTERNATIONAL

Report No.: S8152.03-113-11-R0

Date: 08/29/25

REPORT ISSUED TO

LATICRETE INTERNATIONAL

One Laticrete Park North - 91 Amity Road
Bethany, Connecticut 06524-3423

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Laticrete International to perform testing in accordance with ASTM E90, ASTM E492, AND ASTM E2179 on Ceramic Tile over Laticrete 170 5 mm 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.	S8152.03
SERIES/MODEL:	Ceramic Tile over Laticrete 170 5 mm Rubber Underlayment
STC	54
IIC	51
ΔIIC	21
HIIC	51
ΔHIIC	22

COMPLETED BY: Corey S. Kohler
Technician - Acoustical
TITLE: Testing
SIGNATURE:
DATE: 08/29/25

REVIEWED BY: Daniel B. Mohler
Project Manager - Acoustical
TITLE: Testing
SIGNATURE:
DATE: 08/29/25

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SECTION 3**TEST METHODS**

The specimen was evaluated in accordance with the following:

ASTM E90-23, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*

ASTM E413-22, *Classification for Rating Sound Insulation*

ASTM E492-22, *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 4235.3 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	INT02672	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02673	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02674	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02675	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02676	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02677	10/24	*
2-Channel Analog Output	National Instruments	NI 9260	2-Channel Analog Output	INT02611	N/A	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	08/24	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64908	01/25	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT037389	10/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT03720	10/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	07/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	09/24	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	09/24	
				63811	09/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63745	07/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64340	09/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT037389	10/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64909	07/24	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	64911	09/24	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	11/24	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	07/24	

* 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
Corey S. Kohler	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.

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 Δ IIC (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
Ceramic Tile	295.3 by 295.3	7.5	Daltile	10.98 m ²	15.77 kg/m ²
	Note: Laticrete Permacolor grout was placed into the 6.35 mm joints between the ceramic tile and wiped clean. The tile was back-buttered and placed with light pressure onto a bed of Laticrete 254 Platinum mortar on the underlayment. The mortar was set using a 6.35 mm by 6.35 mm trowel. Both the grout and mortar were allowed to cure to manufacturer's specifications.				
Rubber Underlayment	3023 by 1219	5.0	Laticrete 170	10.98 m ²	3.76 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.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS

TEST DATE	7/23/2025				
DATA FILE NO.	S8152.03				
CLIENT	Laticrete International				
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m ²	Receive Temp.	24.9°C	Source Temp.	22.2°C
TECHNICIAN	CSK	Receive Humidity	64%	Source Humidity	64%



FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT (dB)	NUMBER OF DEFICIENCIES
50	38.8	24.6	93	53	38	2.2	-
63	37.2	21.8	92	48	41	3.9	-
80	34.3	14.2	90	55	34	3.3	-
100	30.6	10.5	87	52	36	1.6	-
125	27.2	10.5	89	52	38	3.5	0
160	28.7	9.6	89	49	42	2.0	0
200	23.6	10.2	88	48	41	0.7	3
250	20.9	10.2	92	51	42	1.4	5
315	19.5	9.4	96	54	42	0.5	8
400	19.8	9.3	95	50	46	0.9	7
500	18.8	8.7	93	45	50	1.1	4
630	17.9	8.4	96	42	55	1.1	0
800	18.3	8.2	96	39	59	0.5	0
1000	20.0	8.3	96	39	58	0.8	0
1250	19.8	8.4	96	39	59	0.8	0
1600	16.5	8.4	96	35	63	0.4	0
2000	13.6	8.8	96	32	65	0.4	0
2500	12.1	9.7	94	28	67	0.5	0
3150	9.1	10.2	93	27	67	0.3	0
4000	8.4	10.6	94	27	67	0.5	0
5000	8.6	10.9	94	26	67	0.6	-
6300	9.2	11.8	88	15	73	0.7	-
8000	9.8	17.5	87	11	74	1.6	-
10000	10.6	17.5	81	9	71	1.6	-
STC Rating	54	(Sound Transmission Class)			Sum of Deficiencies	27	

Notes:

- 1) Receive Room levels less than 6 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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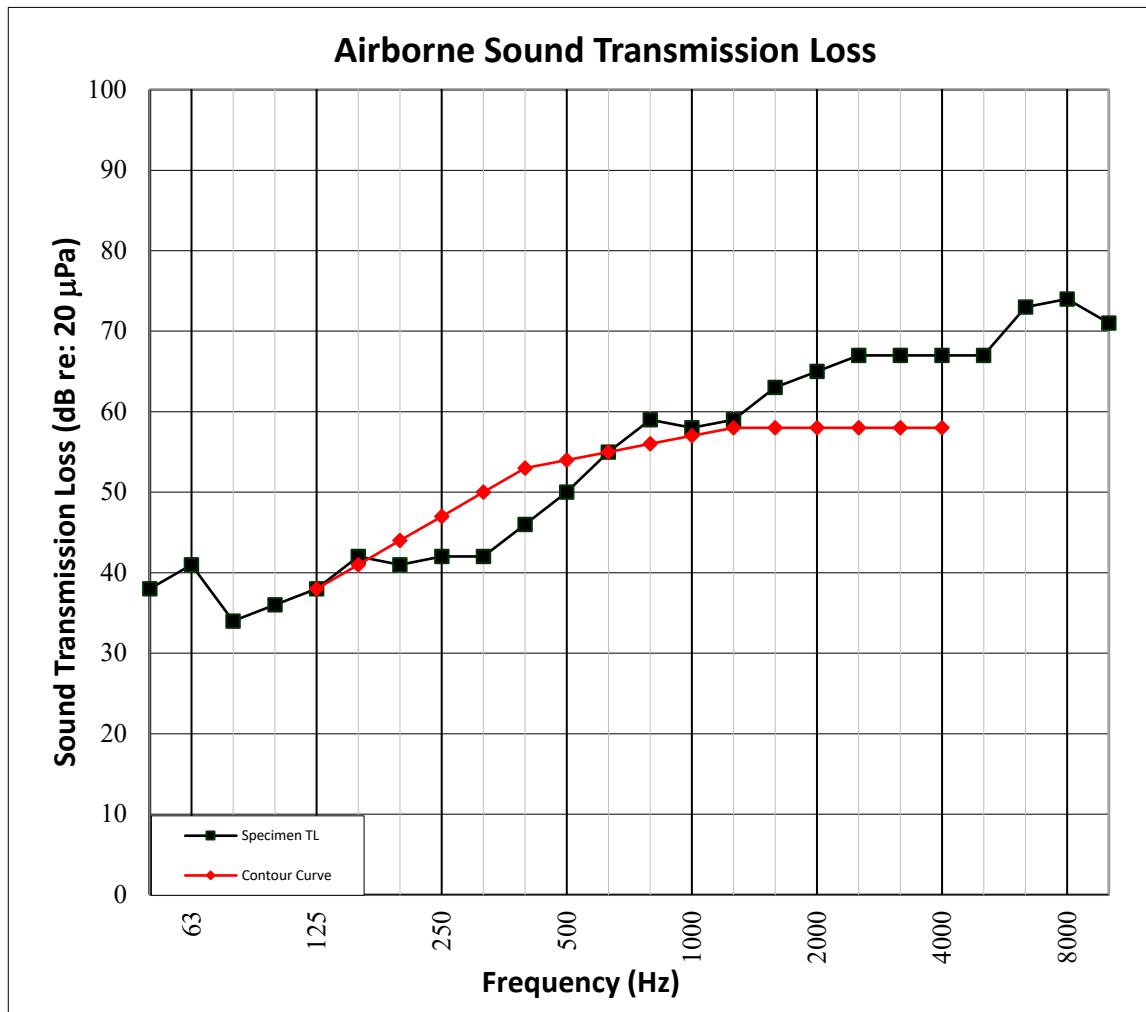
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH

TEST DATE	7/23/2025				
DATA FILE NO.	S8152.03				
CLIENT	Laticrete International				
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m ²	Receive Temp.	24.9°C	Source Temp.	22.2°C
TECHNICIAN	CSK	Receive Humidity	64%	Source Humidity	64%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION

TEST DATE	7/23/2025				
DATA FILE NO.	S8152.03				
CLIENT	Laticrete International				
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp.	24.8°C
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity	64%



FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% SAMPLING LIMIT (dB)	NUMBER OF DEFICIENCIES
50	39.4	22.3	55	2.0	-
63	38.9	21.7	51	3.3	-
80	34.1	13.5	51	2.4	-
100	32.0	11.5	52	1.3	0
125	25.9	10.9	56	2.0	0
160	24.1	9.5	58	1.0	0
200	20.9	9.6	63	0.5	2
250	18.4	10.5	64	0.6	3
315	17.9	10.2	66	0.4	5
400	22.0	9.4	63	0.7	3
500	19.6	8.6	62	0.5	3
630	20.5	8.0	63	0.6	5
800	17.7	8.2	61	0.4	4
1000	19.5	8.2	59	0.5	3
1250	19.1	8.3	53	0.5	0
1600	16.0	8.3	47	0.3	0
2000	13.4	8.8	37	0.5	0
2500	12.0	9.7	28	0.6	0
3150	9.1	10.2	24	0.5	0
4000	8.3	10.6	17	1.0	-
5000	8.6	11.1	11	0.9	-
6300	9.2	12.3	13	0.7	-
8000	9.8	13.4	11	0.5	-
10000	10.5	13.4	11	0.5	-
IIC Rating	51	(Impact Insulation Class)		Sum of Deficiencies	28

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


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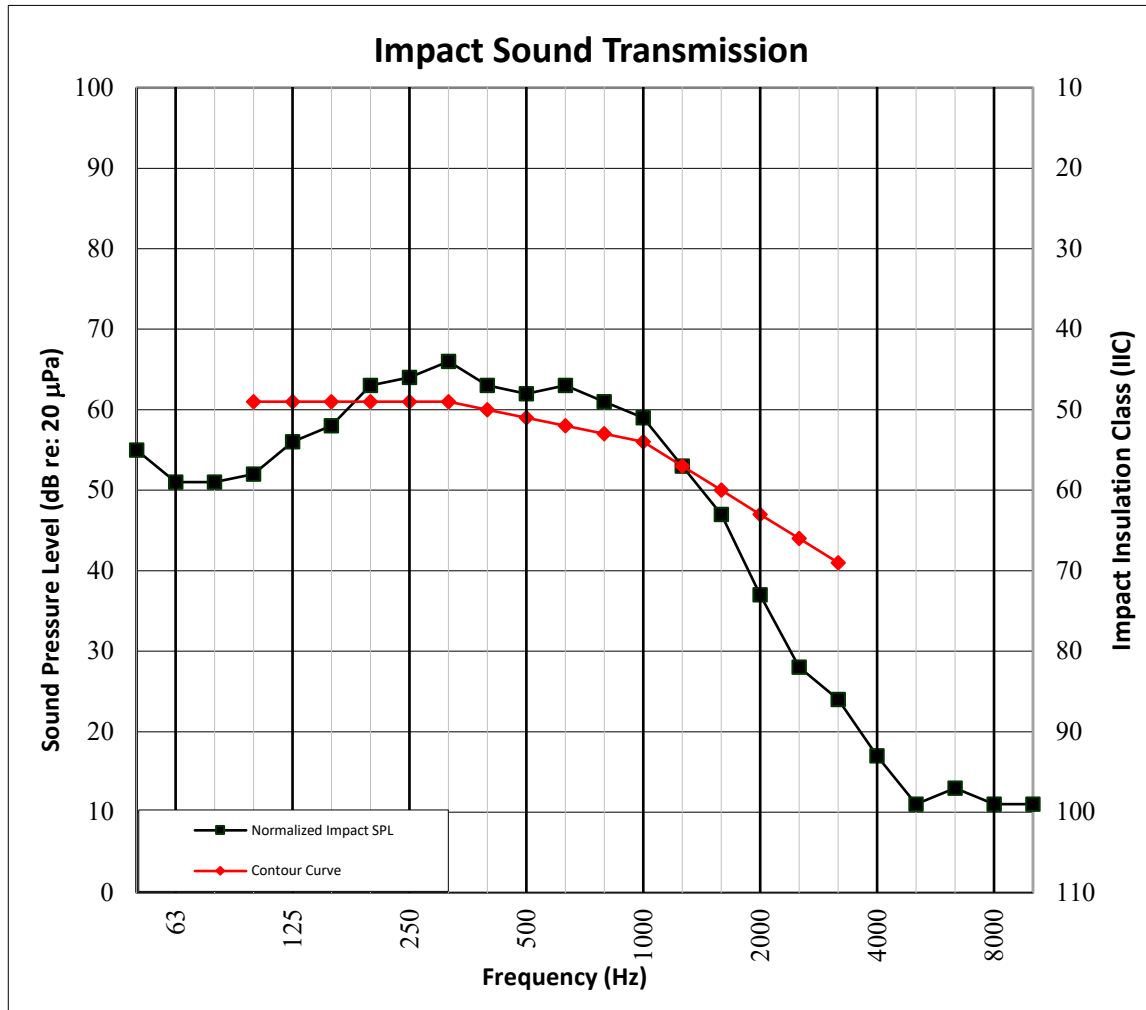
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH

TEST DATE	7/23/2025					
DATA FILE NO.	S8152.03					
CLIENT	Laticrete International					
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab					
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp.	24.8°C	
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity	64%	



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SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION

TEST DATE	7/23/2025				
DATA FILE NO.	S8152.03				
CLIENT	Laticrete International				
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp.	24.8°C
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity	64%



FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% SAMPLE CONFIDENCE LIMIT (dB)	NUMBER OF DEFICIENCIES
400	22.0	9.4	63	0.7	3.3
500	19.6	8.6	62	0.5	2.5
630	20.5	8.0	63	0.6	4.6
800	17.7	8.2	61	0.4	3.7
1000	19.5	8.2	59	0.5	2.7
1250	19.1	8.3	53	0.5	0.4
1600	16.0	8.3	47	0.3	0.0
2000	13.4	8.8	37	0.5	0.0
2500	12.0	9.7	28	0.6	0.0
3150	9.1	10.2	24	0.5	0.0
HIIC Rating	51	(High-Frequency Impact Insulation Class)		Sum of Deficiencies	17.3

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

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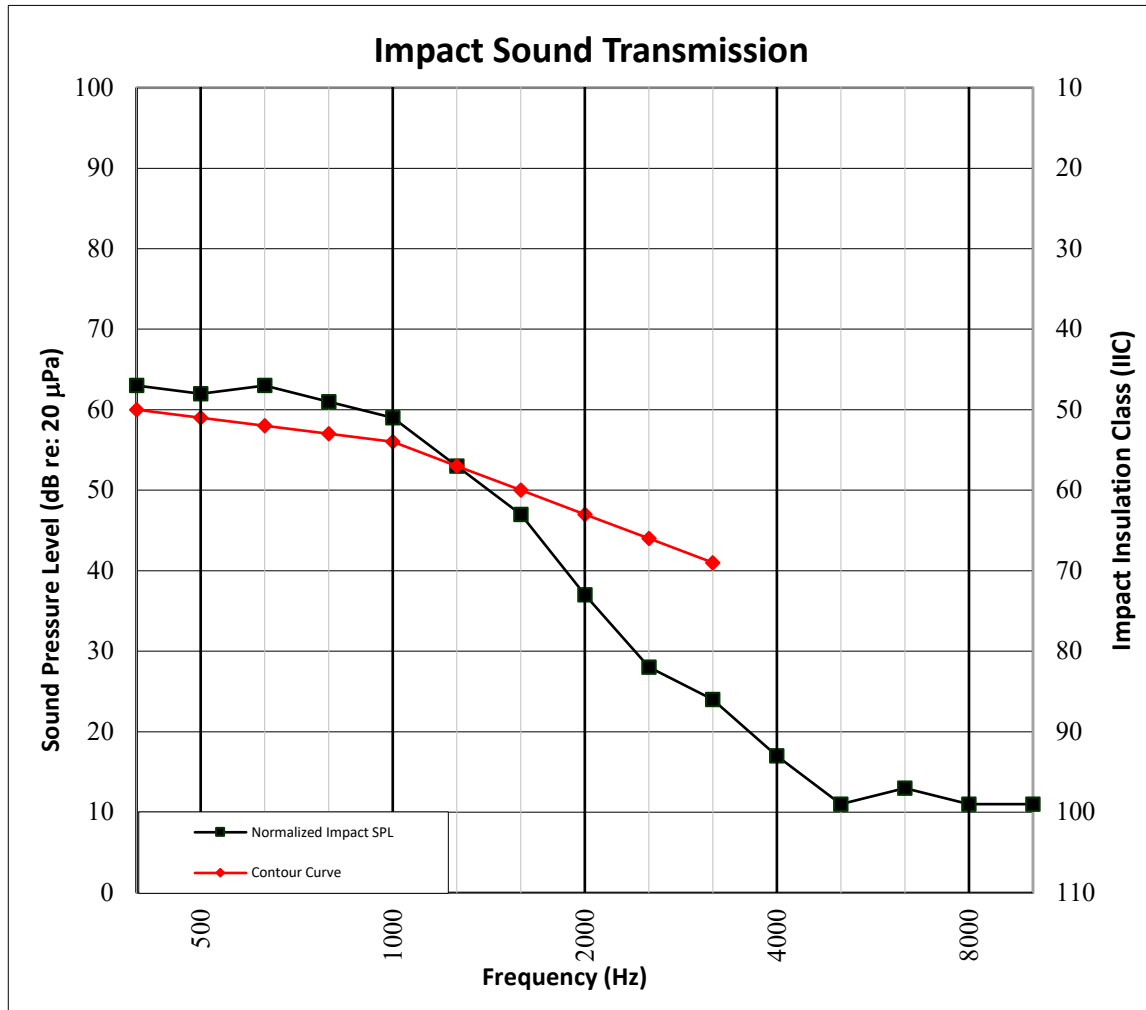
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SECTION 15

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH

TEST DATE	7/23/2025			
DATA FILE NO.	S8152.03			
CLIENT	Laticrete International			
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab			
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp. 24.8°C
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity 64%



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SECTION 16

TEST RESULTS - DELTA IMPACT INSULATION

TEST DATE	7/23/2025				
DATA FILE NO.	S8152.03				
CLIENT	Laticrete International				
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp.	24.8°C
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity	64%



FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL BARE (dB)	95% CONF LIMIT	NORMALIZED IMPACT SPL SPEC (dB)	95% SAMPL LIMIT	RESULT ARRAY L _{ref,c}	NUMBER OF DEFICIENCIES
100	32.0	11.5	59.2	1.2	52.4	1.6	60.0	0
125	25.9	10.9	60.2	1.4	55.9	2.5	63.0	0
160	24.1	9.5	62.3	0.9	58.4	1.3	64.0	1
200	20.9	9.6	65.5	0.7	62.6	0.6	66.0	3
250	18.4	10.5	65.8	0.8	63.6	0.7	67.0	4
315	17.9	10.2	68.3	0.8	66.5	0.5	68.0	5
400	22.0	9.4	67.9	0.7	63.3	0.9	65.0	3
500	19.6	8.6	69.1	0.4	61.5	0.6	63.0	2
630	20.5	8.0	70.8	0.6	62.6	0.7	63.0	3
800	17.7	8.2	71.0	0.6	60.7	0.6	61.0	2
1000	19.5	8.2	72.0	0.6	58.7	0.6	59.0	1
1250	19.1	8.3	71.8	0.7	53.4	0.6	54.0	0
1600	16.0	8.3	71.9	0.7	47.0	0.4	47.0	0
2000	13.4	8.8	71.0	0.7	37.4	0.6	38.0	0
2500	12.0	9.7	70.7	0.7	27.8	0.7	29.0	0
3150	9.1	10.2	69.7	0.8	23.7	0.7	26.0	0
ΔIIC Rating	21	(Delta Impact Insulation Class)				Sum of Deficiencies		24
ΔHIIC Rating	22	(Delta High-Frequency Impact Insulation Class)				Sum of Deficiencies		16

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

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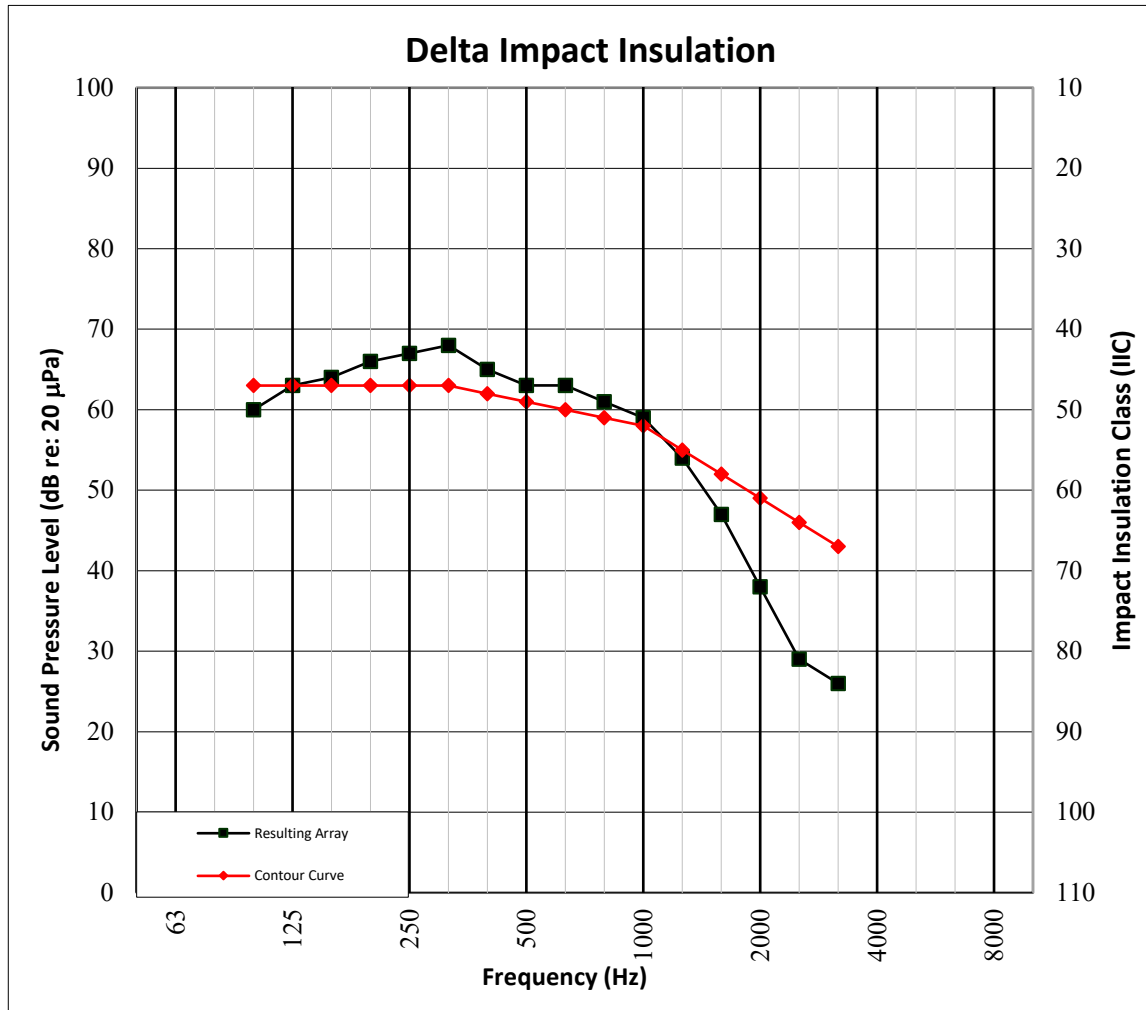
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SECTION 17

TEST RESULTS - DELTA IMPACT INSULATION GRAPH

TEST DATE	7/23/2025			
DATA FILE NO.	S8152.03			
CLIENT	Laticrete International			
DESCRIPTION	7.5 mm Daltile Ceramic Tile, 5 mm Laticrete 170 Rubber Underlayment, 152.4 mm 5000 PSI Concrete Slab			
SPECIMEN AREA	10.98 m ²	Maximum Temp.	24.9°C	Minimum Temp. 24.8°C
TECHNICIAN	CSK	Max. Humidity	64%	Min. Humidity 64%



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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

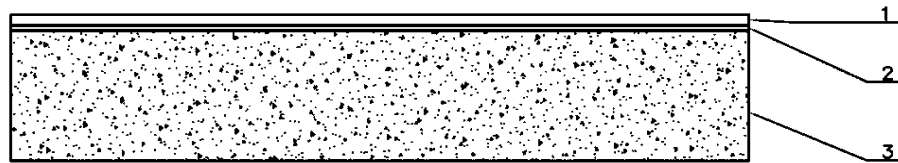
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SECTION 19

DRAWING



- 1-Floor Topping
- 2-Underlayment
- 3-Concrete Slab

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SECTION 20

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	08/29/25	N/A	Original Report Issue