

# LATICRETE INTERNATIONAL ACOUSTICAL PERFORMANCE TEST REPORT

## SCOPE OF WORK

ASTM E90, ASTM E492, AND ASTM E2179 TESTING ON  
DAL TILE PORCELAIN TILE OVER LATICRETE 170-3

## SPECIMEN TYPE

Concrete Slab - 152 mm (6")

## REPORT NUMBER

H6150.68-113-11-R0

## TEST DATE

10/06/17

## ISSUE DATE

08/24/18

## RECORD RETENTION END

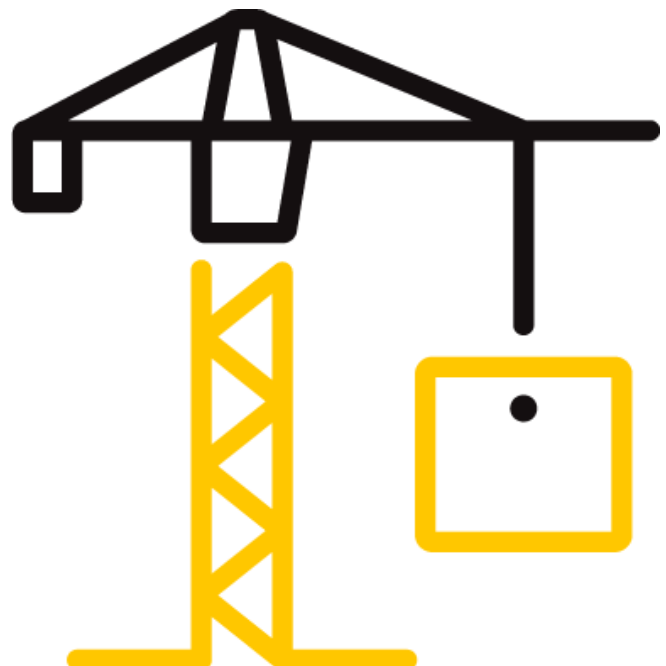
10/06/21

## PAGES

15

## DOCUMENT CONTROL

ATI 00629 (09/19/17)  
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## TEST REPORT FOR LATICRETE INTERNATIONAL

Report No.: H6150.68-113-11-R0

Date: 08/24/18

### REPORT ISSUED TO

#### LATICRETE INTERNATIONAL

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

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted to perform testing in accordance with ASTM E90, ASTM E492, AND ASTM E2179 on Daltile Porcelain Tile over Laticrete 170-3. This report is a reissue in the name of Laticrete International through written authorization from the original report holder. Results obtained are tested values and were secured by using the designated test method(s). 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

<b>DATA FILE NO.</b>	H6150.66
<b>SERIES/MODEL:</b>	Daltile Porcelain Tile over Laticrete 170-3
<b>STC</b>	54
<b>IIC</b>	44
<b>ΔIIC</b>	16

**COMPLETED BY:** Daniel B. Mohler  
Project Lead - Acoustical  
**TITLE:** Testing  
**SIGNATURE:**  
**DATE:** 08/24/18

**COMPLETED BY:** Jordan Strybos  
Project Manager - Acoustical  
**TITLE:** Testing  
**SIGNATURE:**  
**DATE:** 08/24/18

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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 E2179-03(2016)**, *Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors*

**ASTM E989-06 (2012)**, *Classification for Determination of Impact Insulation Class (IIC)*

**ASTM E2235-04 (2012)**, *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

**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 (6")) 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 4221.1 kg / 9306.2 lbs. B&C 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.

This report is reissued in the name of Laticrete International through written authorization from the original report holder. The original Report No. is H6150.66-113-11.

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.

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**SECTION 5  
EQUIPMENT**

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition Card	63763-1	06/16 *
Data Acquisition Unit	National Instruments	PXI-4462	Input Card	63763-4	07/16 *
Data Acquisition Unit	National Instruments	PXI-4462	Input Card	63763-5	06/16 *
Microphone Calibrator	Norsonic	1251	Pistonphone calibrator	INT00127	03/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65617	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	05/17
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/16
				63811	10/16
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63738	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63739	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63740	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63742	04/17
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	63741	04/17
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	11/16
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	Tapping Machine	65351	02/17

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

<b>VT RECEIVE ROOM VOLUME</b>	158.86 m <sup>3</sup> (5610.1 ft <sup>3</sup> )
<b>VT SOURCE ROOM VOLUME</b>	190 m <sup>3</sup> (6709.79 ft <sup>3</sup> )

**SECTION 6  
LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Daniel B. Mohler	Intertek B&C
Jordan Strybos	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 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. Four 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), and  $\Delta$ IIC (Delta Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, and ASTM E2179, respectively.

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**SECTION 9**

**TEST SPECIMEN DESCRIPTION**

MATERIAL	Dimensions (mm/inch)	Thickness (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Porcelain Tile	304.8 by 304.8 12 by 12	7.8 / 0.31	Daltile	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	15.7 kg/m <sup>2</sup> 3.22 lb/ft <sup>2</sup>
	Note: Laticrete Permacolor grout was placed into the 6.35 mm (1/4") joints between the porcelain tile and wiped clean. The porcelain tile was placed onto a bed of Laticrete Platinum 254 mortar on the underlayment. The mortar was set using a 6.35 mm by 6.35 mm (1/4" by 1/4") trowel. Both the grout and mortar were allowed to cure to manufacturer's specifications.				
Rubber Underlayment	3022.6 by 914.4 119 by 36	3 / 0.12	Laticrete 170-3	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	2.55 kg/m <sup>2</sup> 0.52 lb/ft <sup>2</sup>
	Note: A sheet of 2 mil polyethylene plastic was adhered to the subfloor topping with 3M Super 77 spray adhesive. The underlayment was adhered to the sheeting with Laticrete Platinum 254 mortar, which was spread using a 1.59 mm by 0.79 mm by 1.98 mm (1/16" by 1/32" by 5/64") U-notch trowel. Mortar was allowed to cure per manufacturer's specifications.				
Concrete Slab	3023 by 3632 119 by 143	152.4 / 6	5000 PSI	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	366.18 kg/m <sup>2</sup> 75 lb/ft <sup>2</sup>
	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.				

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### SECTION 10

### TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	20.4°C (68.7°F)	<b>Source Temp.</b>	19.2°C (66.6°F)
<b>TECHNICIAN</b>	DBM	<b>Receive Humidity</b>	64%	<b>Source Humidity</b>	64%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
50	42.9	25.8	103	63	36	4.3	-
63	42.2	27.3	102	63	35	3.5	-
80	47.6	15.0	110	70	38	4.9	-
100	31.9	13.5	107	67	39	2.1	-
125	34.2	9.4	106	70	37	2.0	1
160	29.5	9.5	108	69	39	1.3	2
200	27.1	11.1	105	66	38	1.3	6
250	29.2	10.7	104	63	41	0.9	6
315	26.8	10.0	107	61	46	1.0	4
400	24.6	7.7	106	59	48	1.0	5
500	26.3	7.8	105	56	51	0.7	3
630	25.7	7.5	106	55	53	0.4	2
800	26.3	7.5	105	53	54	0.7	2
1000	23.6	7.3	105	50	57	0.6	0
1250	21.2	7.3	105	47	59	0.5	0
1600	18.4	7.5	105	45	61	0.5	0
2000	14.5	8.2	104	43	63	0.6	0
2500	9.8	9.2	102	39	64	0.6	0
3150	7.4	10.0	103	36	67	0.8	0
4000	6.2	11.1	104	34	70	1.0	0
5000	5.9	12.7	104	30	73	1.0	-
6300	6.2	15.9	97	20	76	1.3	-
8000	6.5	20.8	96	15	78	1.4	-
10000	6.8	26.1	92	8	80	1.1	-
<b>STC Rating</b>	<b>54</b>	<i>(Sound Transmission Class)</i>			<b>Sum of Deficiencies</b>	<b>31</b>	
<b>Rw Rating</b>	<b>54</b>	<i>(Sound Reduction Index)</i>					

- 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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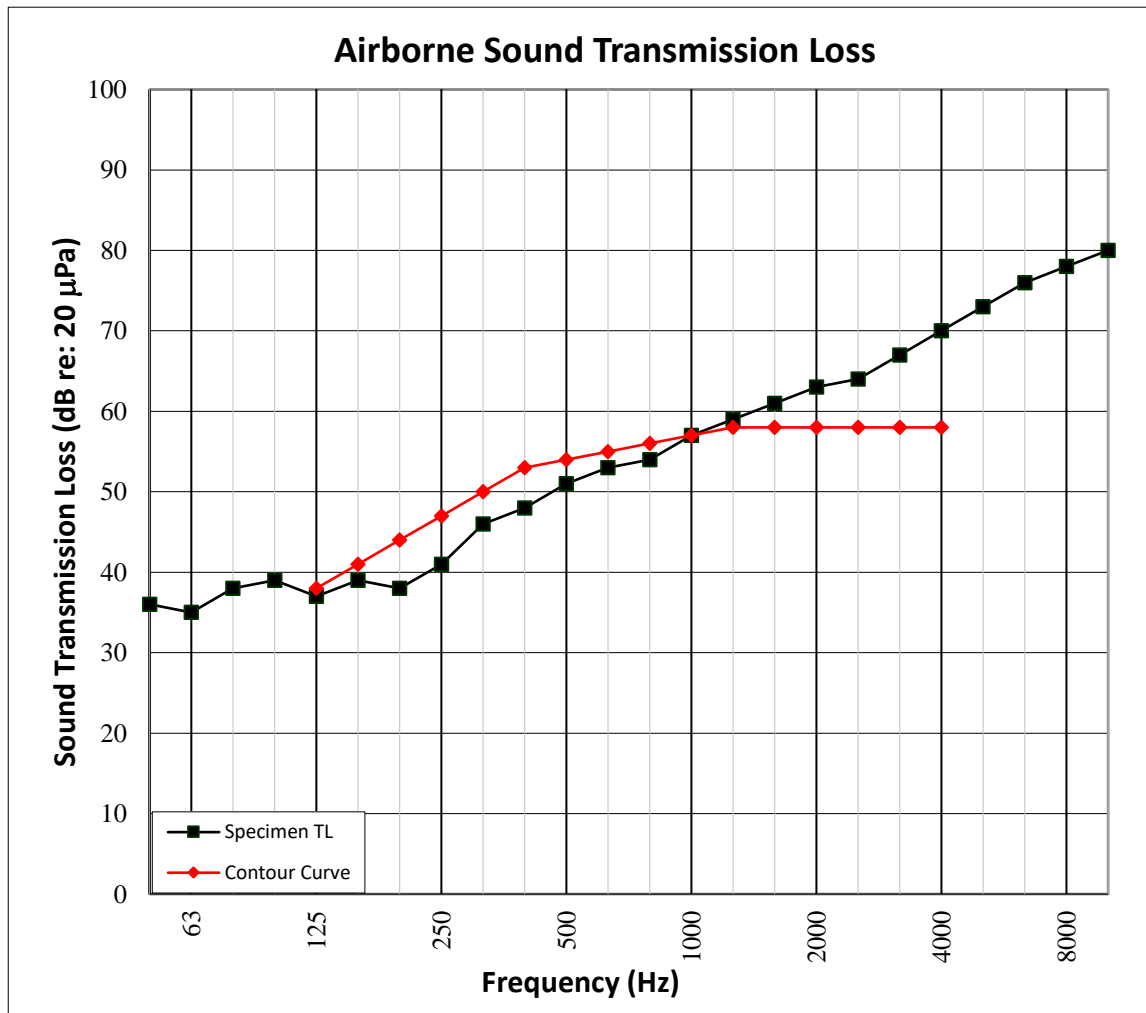
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### SECTION 11

#### TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	20.4°C (68.7°F)	<b>Source Temp.</b>	19.2°C (66.6°F)
<b>TECHNICIAN</b>	DBM	<b>Receive Humidity</b>	64%	<b>Source Humidity</b>	64%





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### SECTION 12

#### TEST RESULTS - IMPACT SOUND TRANSMISSION



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.4°C (68.7°F)	<b>Minimum Temp.</b>	20.4°C (68.7°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	64%	<b>Min. Humidity</b>	64%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
50	48.6	27.0	55	1.8	-
63	45.3	30.3	53	2.3	-
80	47.7	16.1	55	1.8	-
100	31.8	14.3	56	1.9	0
125	32.1	9.0	58	1.4	0
160	31.0	10.0	64	1.0	0
200	28.6	11.1	67	0.8	0
250	29.5	11.1	69	0.9	1
315	27.3	9.3	68	0.7	0
400	26.9	7.9	68	0.6	1
500	26.7	7.7	68	0.5	2
630	25.8	7.3	69	0.3	4
800	25.8	7.4	67	0.6	3
1000	23.3	7.3	64	0.4	1
1250	21.1	7.3	60	0.5	0
1600	18.8	7.5	59	0.4	2
2000	15.3	8.3	58	0.4	4
2500	11.7	9.1	55	0.7	4
3150	11.2	10.1	54	0.8	6
4000	6.7	11.2	51	1.0	-
5000	6.7	12.9	47	0.9	-
6300	6.2	15.8	43	1.2	-
8000	6.5	20.7	38	1.4	-
10000	6.8	25.6	34	2.0	-
<b>IIC Rating</b>	<b>44</b>	<i>(Impact Insulation Class)</i>		<b>Sum of Deficiencies</b>	<b>28</b>

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

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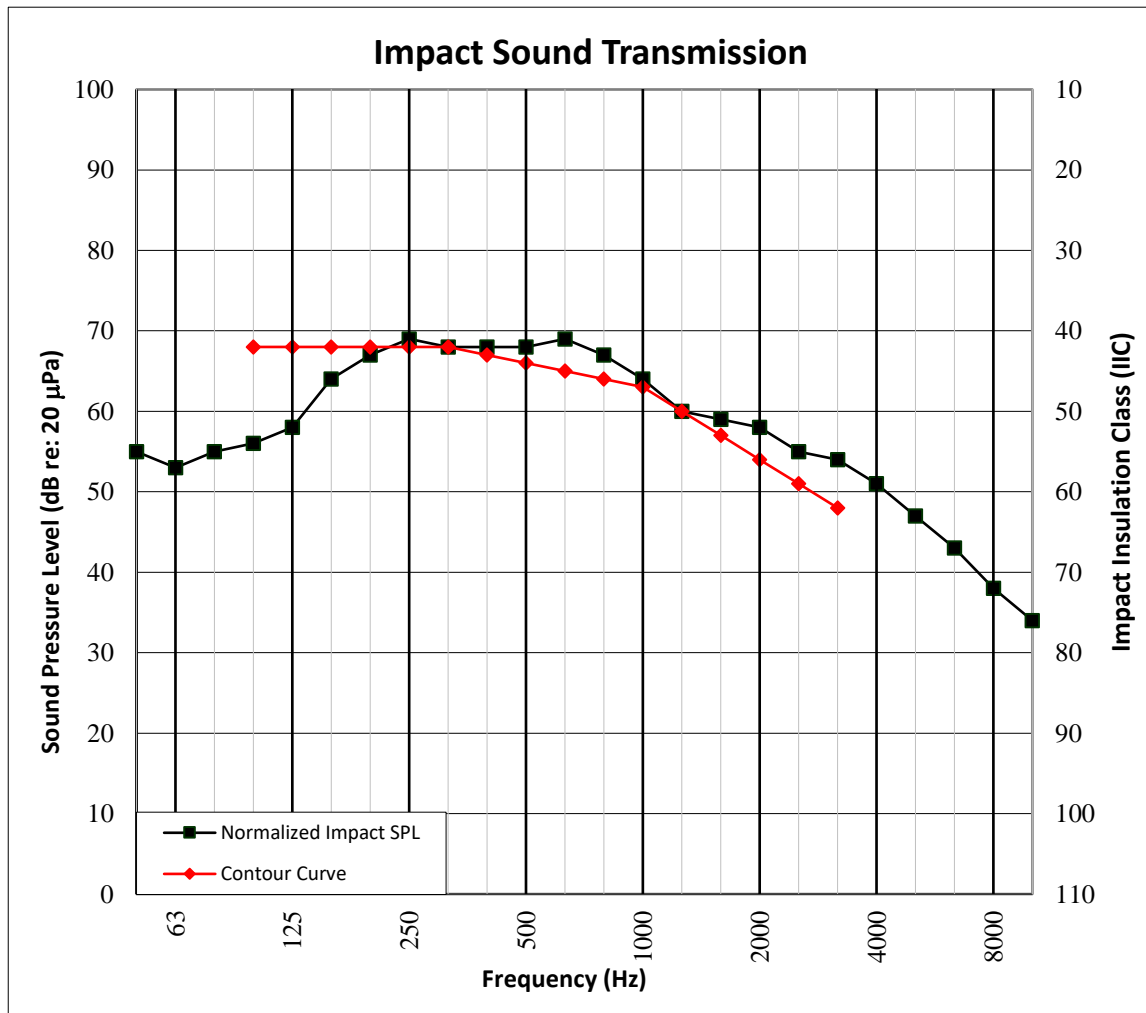
Date: 08/24/18

### SECTION 13

### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.4°C (68.7°F)	<b>Minimum Temp.</b>	20.4°C (68.7°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	64%	<b>Min. Humidity</b>	64%



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### SECTION 14

#### TEST RESULTS - DELTA IMPACT INSULATION



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.4°C (68.7°F)	<b>Minimum Temp.</b>	20.4°C (68.7°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	64%	<b>Min. Humidity</b>	64%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL BARE (dB)	95% CONF LIMIT	NORMALIZED IMPACT SPL SPEC (dB)	95% CONF LIMIT	RESULT ARRAY L <sub>ref,c</sub>	NUMBER OF DEFICIENCIES
100	31.8	14.3	57.0	1.6	56.3	2.3	66.0	0
125	32.1	9.0	58.7	1.9	58.0	1.8	67.0	0
160	31.0	10.0	65.0	1.0	63.7	1.3	67.0	0
200	28.6	11.1	67.9	1.0	66.7	1.0	67.0	0
250	29.5	11.1	69.8	0.8	69.1	1.1	68.0	0
315	27.3	9.3	70.3	0.9	68.0	0.9	67.0	0
400	26.9	7.9	69.7	0.4	67.8	0.8	68.0	1
500	26.7	7.7	69.3	0.4	68.5	0.6	70.0	4
630	25.8	7.3	70.9	0.5	68.7	0.4	69.0	4
800	25.8	7.4	71.5	0.4	66.9	0.7	67.0	3
1000	23.3	7.3	72.2	0.4	63.5	0.5	63.0	0
1250	21.1	7.3	72.3	0.4	60.3	0.6	60.0	0
1600	18.8	7.5	73.3	0.4	58.7	0.5	57.0	0
2000	15.3	8.3	73.5	0.4	57.6	0.5	56.0	2
2500	11.7	9.1	73.2	0.8	55.3	0.8	54.0	3
3150	11.2	10.1	72.3	0.7	53.5	1.0	53.0	5
<b>ΔIIC Rating</b>	<b>16</b>	<i>(Delta Impact Insulation Class)</i>			<b>Sum of Deficiencies</b>		<b>22</b>	

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

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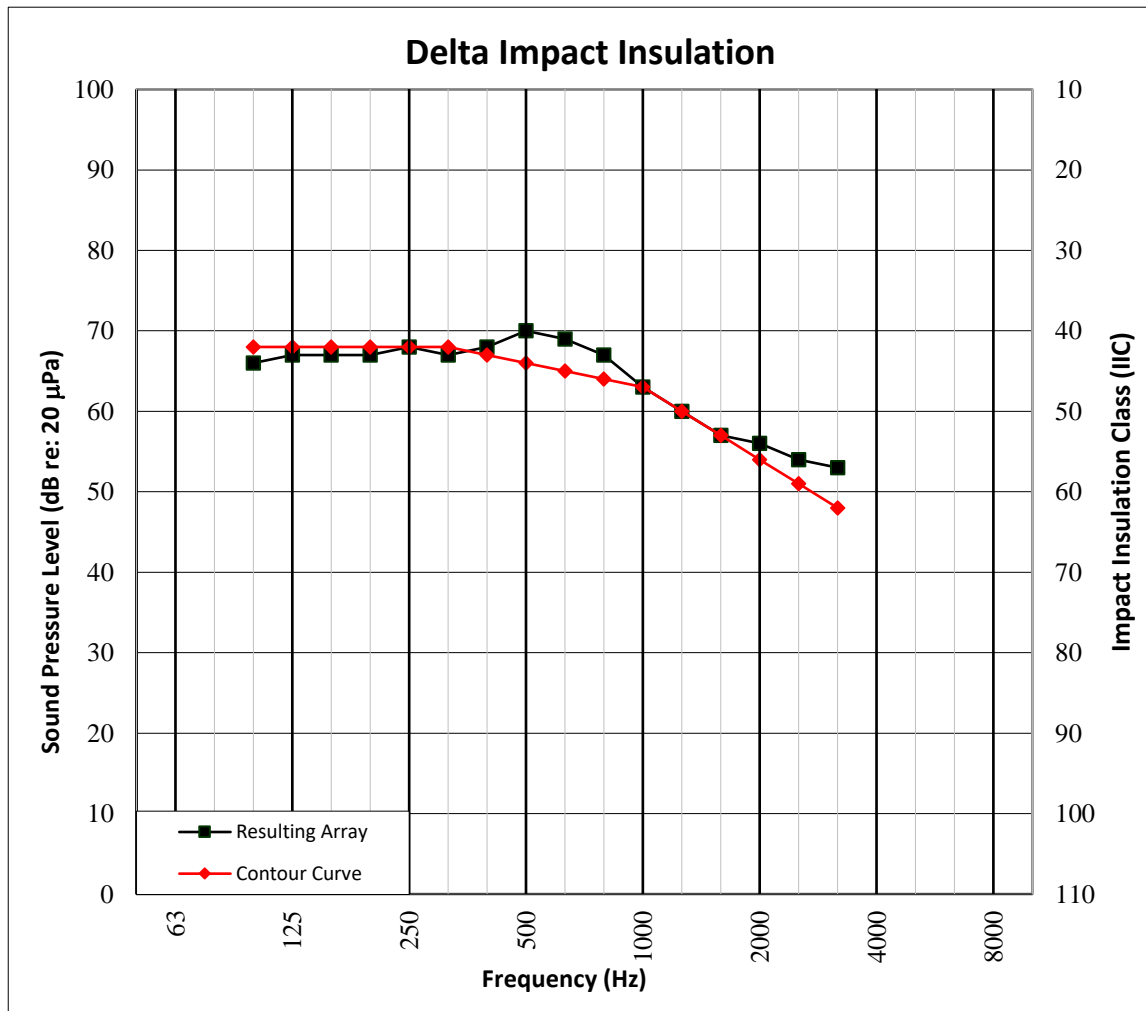
Date: 08/24/18

### SECTION 15

#### TEST RESULTS - DELTA IMPACT INSULATION GRAPH



<b>TEST DATE</b>	10/6/2017				
<b>DATA FILE NO.</b>	H6150.66				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 3 mm (0.12") Laticrete 170-3 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.4°C (68.7°F)	<b>Minimum Temp.</b>	20.4°C (68.7°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	64%	<b>Min. Humidity</b>	64%



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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

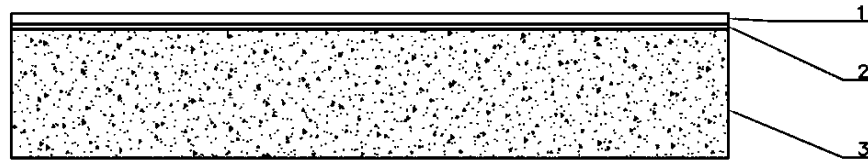
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### SECTION 17

#### DRAWING



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

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**SECTION 18**

**REVISION LOG**

REVISION #	DATE	PAGES	DESCRIPTION
R0	08/24/18	N/A	Original Report Issue - Reissue of Report No. H6150.66-113-11 in the name of Laticrete International.