

# LATICRETE INTERNATIONAL ACOUSTICAL PERFORMANCE TEST REPORT

**SCOPE OF WORK**

ASTM E90, ASTM E492, AND ASTM E2179 TESTING ON DAL TILE PORCELAIN TILE ON LATICRETE 170-05

**SPECIMEN TYPE**

Concrete Slab - 152 mm (6")

**REPORT NUMBER**

H2525.35-113-11-R0

**TEST DATE**

06/12/17

**ISSUE DATE**

04/26/19

**RECORD RETENTION END**

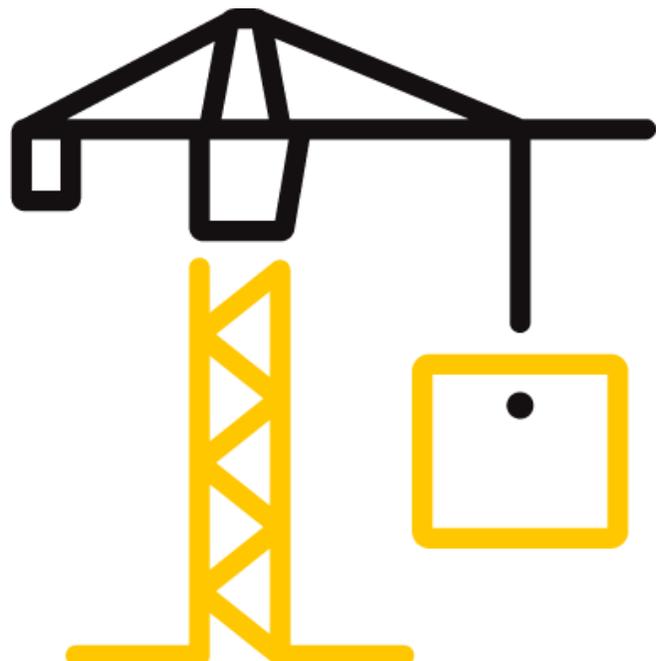
06/12/21

**PAGES**

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**DOCUMENT CONTROL**

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

Report No.: H2525.35-113-11-R0

Date: 04/26/19

### 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 on Laticrete 170-05. 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>	H2525.01
<b>SERIES/MODEL:</b>	Daltile Porcelain Tile on Laticrete 170-05
<b>STC</b>	52
<b>IIC</b>	50
<b>ΔIIC</b>	22

**COMPLETED BY:** Daniel B. Mohler  
Project Lead - Acoustical  
**TITLE:** Testing  
**SIGNATURE:**  
**DATE:** 04/26/19

**COMPLETED BY:** Jordan Strybos  
Project Manager - Acoustical  
**TITLE:** Testing  
**SIGNATURE:**  
**DATE:** 04/26/19

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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 original 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 4238.9 kg / 9345.2 lbs. 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.

This report is reissued in the name of Laticrete International through written authorization from the original report holder. The original Report No. is H2525.01-113-11.

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-4462	Data Acquisition Card	63763-5	06/18 *
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	65124	05/18 *
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-1	06/18 *
Microphone Calibrator	Norsonic	Nor1251	Acoustical Calibrator	65105	06/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65617	06/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	06/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	06/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	07/18
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/17
				63811	10/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01009	02/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63739	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63740	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	03/18
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63741	04/18
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	INT00603	03/18
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	12/17

\* 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 average temperature and humidity of both the source and received 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), 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 (0.25") joints between the porcelain tile and wiped clean. The porcelain tile was back-buttered and placed with light pressure onto a bed of Laticrete Platinum 254 mortar on the underlayment. The mortar was set using a 6.35 mm by 6.35 mm (0.25" by 0.25") trowel. Both the grout and mortar were allowed to cure to manufacturer's specifications.				
Rubber Underlayment	3023 by 1219 119 by 48	5 / 0.2	Laticrete 170-05	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	4.17 kg/m <sup>2</sup> 0.85 lb/ft <sup>2</sup>
	Note: A sheet of 2 mil polyethylene plastic sheeting was adhered to the floor slab with 3M Super 77 spray adhesive. The underlayment was adhered to the sheeting with the Laticrete Platinum 254 thinset 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. Adhesive 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>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	22.7°C (72.8°F)	<b>Source Temp.</b>	24.5°C (76.1°F)
<b>TECHNICIAN</b>	DBM	<b>Receive Humidity</b>	51%	<b>Source Humidity</b>	51%

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	38.8	29.0	104	65	35	5.7	-
63	37.3	35.8	102	62	34	4.4	-
80	42.5	15.9	109	67	40	4.1	-
100	32.6	14.6	108	69	38	1.7	-
125	32.1	10.0	105	69	37	1.8	0
160	30.0	10.9	106	69	38	1.6	1
200	26.6	10.8	104	67	37	0.9	5
250	27.9	11.3	103	64	38	0.9	7
315	25.7	10.2	106	65	42	0.7	6
400	24.1	8.6	104	61	44	0.5	7
500	23.5	8.2	102	55	49	0.3	3
630	22.2	8.2	102	49	54	0.7	0
800	23.0	8.4	103	46	58	0.6	0
1000	18.7	8.2	102	42	61	0.5	0
1250	18.5	8.3	100	39	63	0.6	0
1600	15.3	8.3	101	38	64	0.5	0
2000	12.6	9.0	101	38	64	0.6	0
2500	10.8	10.0	97	32	65	0.5	0
3150	9.0	11.0	99	31	68	0.4	0
4000	7.4	12.6	98	27	70	0.4	0
5000	6.5	14.2	96	21	73	0.5	-
6300	6.4	17.6	93	15	76	0.8	-
8000	6.6	23.6	94	13	77	0.9	-
10000	6.8	28.8	92	8	79	0.6	-
<b>STC Rating</b>	<b>52</b>	<i>(Sound Transmission Class)</i>			<b>Sum of Deficiencies</b>	<b>29</b>	
<b>Rw Rating</b>	<b>52</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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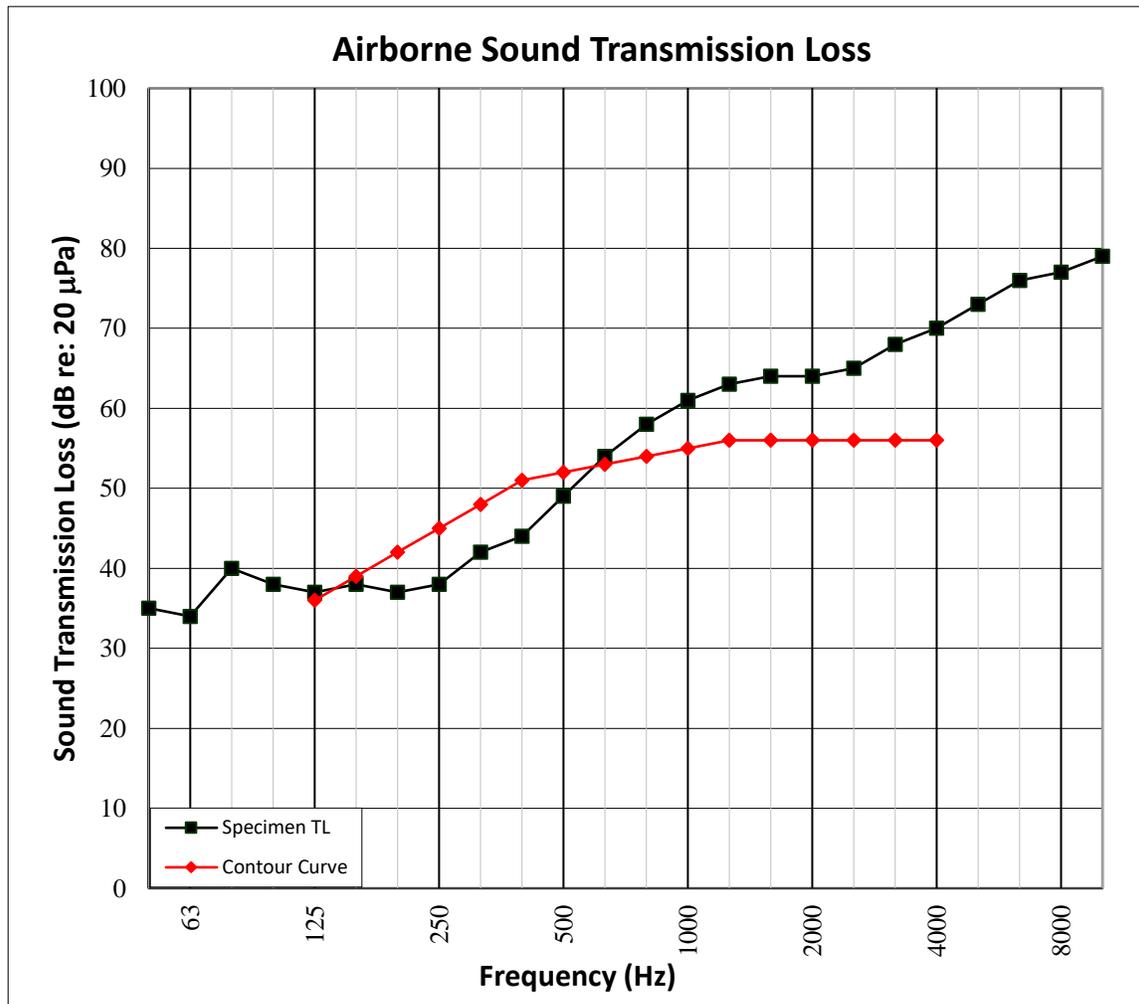
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### SECTION 11

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



<b>TEST DATE</b>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	22.7°C (72.8°F)	<b>Source Temp.</b>	24.5°C (76.1°F)
<b>TECHNICIAN</b>	DBM	<b>Receive Humidity</b>	51%	<b>Source Humidity</b>	51%



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### SECTION 12

#### TEST RESULTS - IMPACT SOUND TRANSMISSION



<b>TEST DATE</b>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	22.9°C (73.3°F)	<b>Minimum Temp.</b>	22.3°C (72.2°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	52%	<b>Min. Humidity</b>	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
50	45.8	34.3	57	2.6	-
63	44.1	26.2	51	3.1	-
80	43.0	15.8	52	2.6	-
100	33.2	13.2	54	1.9	0
125	32.9	9.8	56	1.3	0
160	32.8	10.3	62	1.1	0
200	28.8	10.7	65	0.8	3
250	29.3	11.7	68	0.6	6
315	25.5	10.4	70	0.6	8
400	24.0	8.5	66	0.5	5
500	24.1	8.5	61	0.5	1
630	22.7	8.2	59	0.4	0
800	22.4	8.2	59	0.7	1
1000	19.1	8.3	56	0.5	0
1250	20.9	8.2	54	0.5	0
1600	15.4	8.4	52	0.4	1
2000	12.7	9.1	50	0.6	2
2500	10.2	10.1	47	0.6	2
3150	8.5	11.2	43	0.6	1
4000	7.1	12.7	37	0.7	-
5000	6.2	14.3	29	1.0	-
6300	6.2	17.7	20	1.1	-
8000	6.6	23.4	15	1.5	-
10000	6.8	28.2	13	1.1	-
<b>IIC Rating</b>	<b>50</b>	<i>(Impact Insulation Class)</i>		<b>Sum of Deficiencies</b>	<b>30</b>

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

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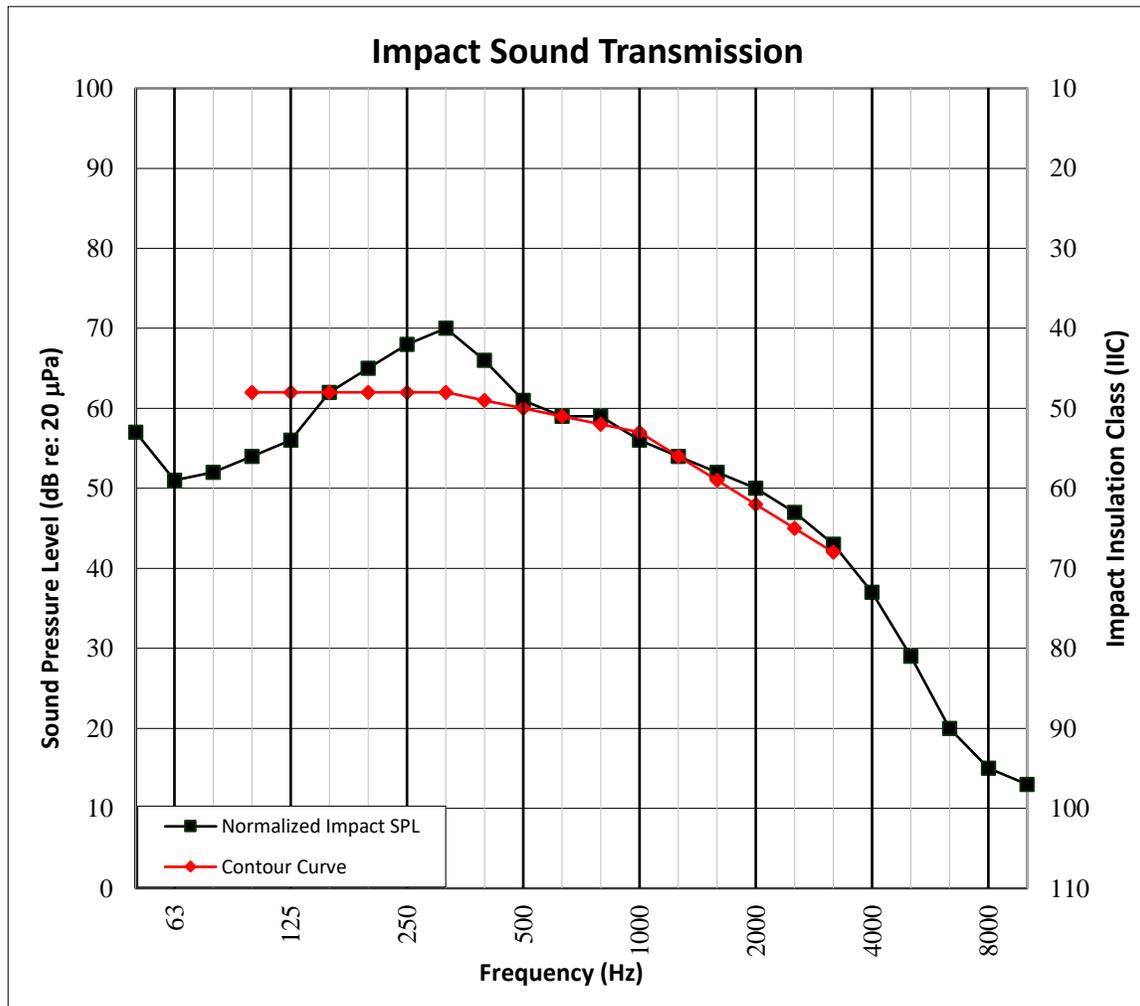
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### SECTION 13

#### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



<b>TEST DATE</b>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	22.9°C (73.3°F)	<b>Minimum Temp.</b>	22.3°C (72.2°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	52%	<b>Min. Humidity</b>	51%



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### SECTION 14

#### TEST RESULTS - DELTA IMPACT INSULATION



<b>TEST DATE</b>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	22.9°C (73.3°F)	<b>Minimum Temp.</b>	22.3°C (72.2°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	52%	<b>Min. Humidity</b>	51%

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	33.2	13.2	59.3	1.9	54.1	2.3	62.0	0
125	32.9	9.8	61.0	1.6	56.2	1.7	63.0	1
160	32.8	10.3	66.0	1.1	62.0	1.4	64.0	2
200	28.8	10.7	68.5	1.1	65.1	1.0	65.0	3
250	29.3	11.7	70.1	0.6	67.5	0.7	66.0	4
315	25.5	10.4	71.0	0.8	69.5	0.8	68.0	6
400	24.0	8.5	70.4	0.6	66.2	0.6	66.0	5
500	24.1	8.5	70.3	0.5	61.2	0.6	61.0	1
630	22.7	8.2	70.8	0.4	59.2	0.5	59.0	0
800	22.4	8.2	71.9	0.8	58.8	0.8	58.0	0
1000	19.1	8.3	72.9	0.6	55.9	0.7	55.0	0
1250	20.9	8.2	73.0	0.6	54.3	0.6	53.0	0
1600	15.4	8.4	73.7	0.5	51.6	0.5	50.0	0
2000	12.7	9.1	74.1	0.6	50.1	0.7	48.0	0
2500	10.2	10.1	73.9	0.8	46.8	0.7	45.0	0
3150	8.5	11.2	73.0	1.0	43.3	0.7	42.0	0
<b>ΔIIC Rating</b>	<b>22</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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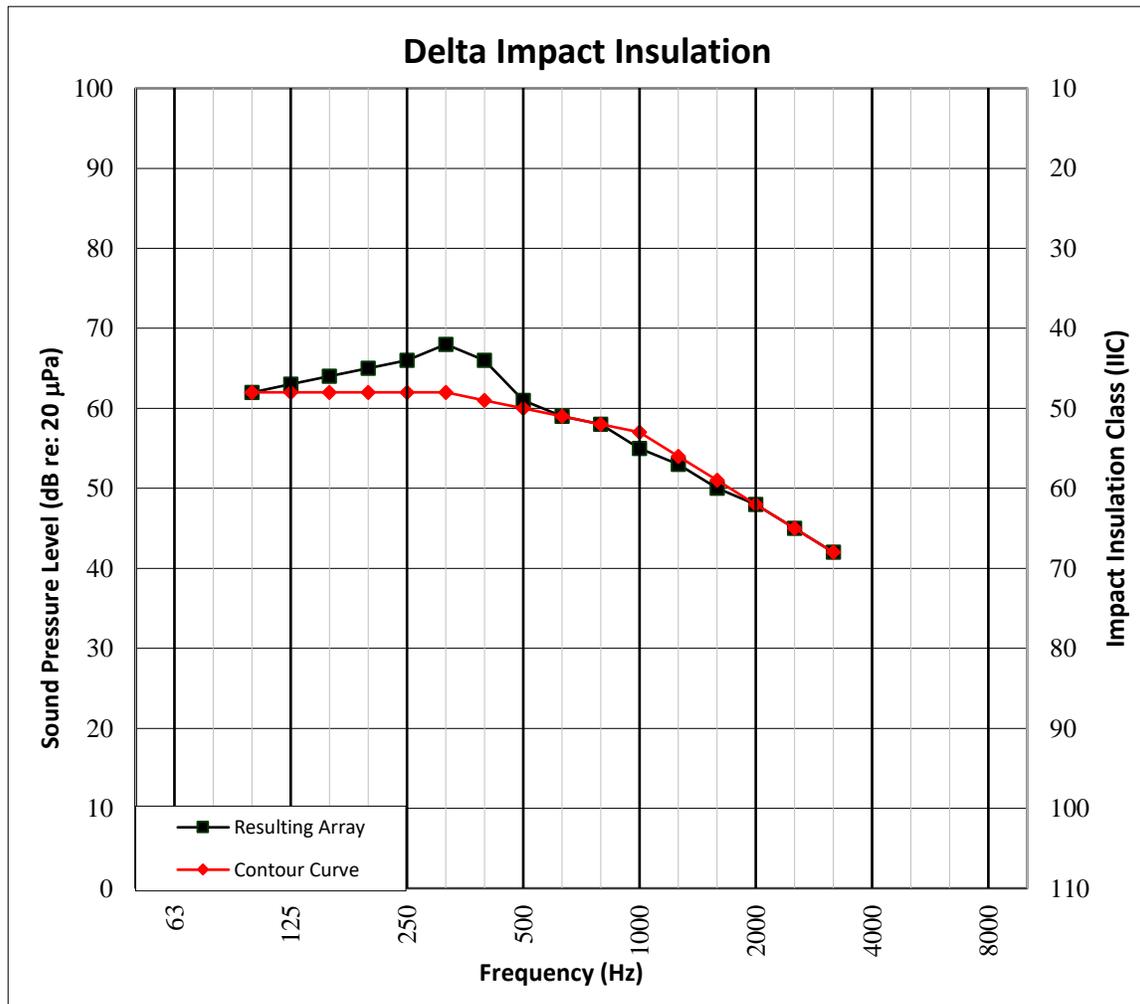
Date: 04/26/19

### SECTION 15

### TEST RESULTS - DELTA IMPACT INSULATION GRAPH



<b>TEST DATE</b>	6/12/2017				
<b>DATA FILE NO.</b>	H2525.01				
<b>CLIENT</b>	Laticrete International				
<b>DESCRIPTION</b>	7.8 mm (0.31") Daltile Porcelain Tile, 5 mm (0.2") Laticrete 170-05 Rubber Underlayment, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	22.9°C (73.3°F)	<b>Minimum Temp.</b>	22.3°C (72.2°F)
<b>TECHNICIAN</b>	DBM	<b>Max. Humidity</b>	52%	<b>Min. Humidity</b>	51%



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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**

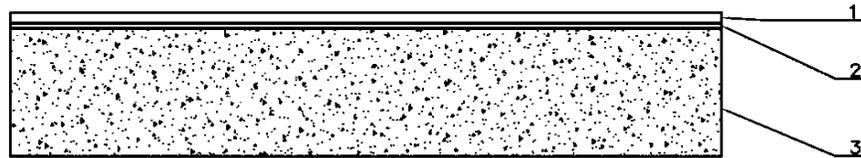
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### SECTION 17

#### DRAWING



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

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**SECTION 18**

**REVISION LOG**

REVISION #	DATE	PAGES	DESCRIPTION
R0	04/26/19	N/A	Original Report Issue - Reissue of Report No. H2525.01-113-11 in the name of Laticrete International.