

# REGUPOL AMERICA

# ACOUSTICAL

# PERFORMANCE

# TEST REPORT

## SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON 10MM REGUPOL SONUS SOUND CONTROL UNDERLAYMENT UNDER CERAMIC TILE

## SPECIMEN TYPE

203 mm Concrete Slab with Drop Ceiling

## REPORT NUMBER

I7419.02-303-11-R0

## TEST DATE(S)

08/16/18

## ISSUE DATE

08/23/18

## RECORD RETENTION END

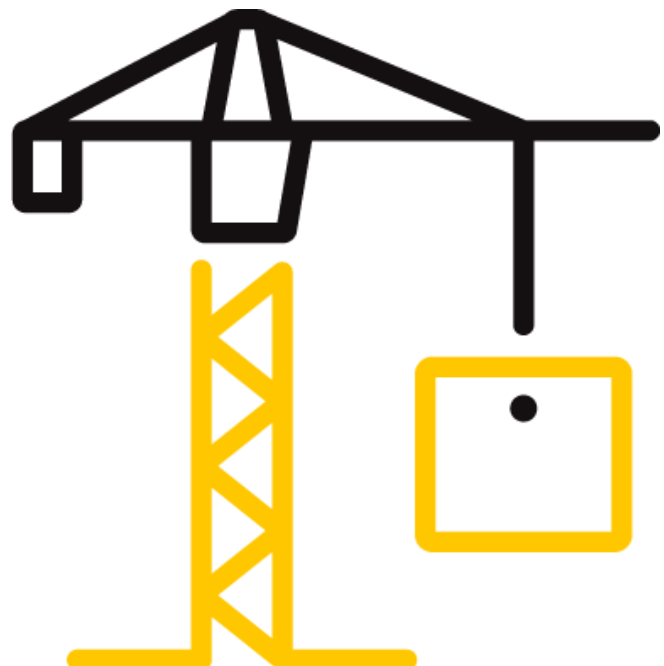
08/16/22

## PAGES

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## DOCUMENT CONTROL

ATI 00629 (03/21/18)  
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## TEST REPORT FOR REGUPOL AMERICA

Report No.: I7419.02-303-11-R0

Date: 08/23/18

### REPORT ISSUED TO

#### REGUPOL AMERICA

11 Ritter Way

Lebanon, Pennsylvania 17042

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Regupol America to perform testing in accordance with ASTM E90 AND ASTM E492 on 10mm Regupol Sonus Sound Control Underlayment under Ceramic Tile. 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 Lake Forest, California.

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>	I7419.02
<b>SERIES/MODEL:</b>	10mm Regupol Sonus Sound Control Underlayment under Ceramic Tile
<b>STC</b>	59
<b>IIC</b>	61

**COMPLETED BY:** Leeland S. Hoover  
**TITLE:** Technician I - Acoustical Testing  
**SIGNATURE:**  
**DATE:** 08/23/18

**COMPLETED BY:** Bradley D. Hunt  
**TITLE:** Laboratory Manager - Acoustical Testing  
**SIGNATURE:**  
**DATE:** 08/23/18

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**SECTION 3****TEST METHOD(S)**

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 E989-06 (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 (203 mm Concrete Slab with Drop 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 6441.4 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.

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**SECTION 5  
EQUIPMENT**

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Unit	National Instruments	PXIe-1073	Data Acquisition Card	INT00626	10/17
Microphone Calibrator	Norsonic	1251	Pistonphone calibrator	INT00127	06/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00229	03/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00230	03/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00231	03/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00232	03/18
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00233	03/18
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	INT00301	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00248	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00249	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00250	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00251	04/17
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63741	04/17
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	INT00302	04/18
Tapping Machine	Look Line	EM50	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>	182.66 m <sup>3</sup>
<b>VT SOURCE ROOM VOLUME</b>	129.4 m <sup>3</sup>

**SECTION 6  
LIST OF OFFICIAL OBSERVERS**

NAME	COMPANY
Leeland S. Hoover	Intertek B&C
Bradlay D. Hunt	Intertek B&C
Marco T. Santa Rosa	Intertek B&C
Triston N. Dees	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 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) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E413 and ASTM E989, respectively.

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**SECTION 9**

**TEST SPECIMEN DESCRIPTION**

MATERIAL	DIMENSIONS (mm/inch)	THICKNESS (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Ceramic Tile	301.6 by 301.6	8.2	Daltile	11.15 m <sup>2</sup>	16.4 kg/m <sup>2</sup>
	Note: Placed with light pressure onto a bed of mortar on the underlayment. The mortar was set using a 6.35 mm by 6.35 mm trowel. Sanded grout was placed into the 6.35 mm joints between the tiles and wiped clean. Both the grout and mortar were allowed to cure to manufacturer's specifications.				
Sound Control Underlayment	3048 by 1219	10.0	Regupol America	11.15 m <sup>2</sup>	7.52 kg/m <sup>2</sup>
	N/A				
Concrete Slab	3023 by 3632	203.2	5000 PSI	11.15 m <sup>2</sup>	524.71 kg/m <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.				
Sound Isolation Clip	76.2 by 34.9	28.6	Regupol SonusClips	23 m <sup>2</sup>	0.05 kg/m <sup>2</sup>
	Note: The clips were fastened to the concrete slab using a 24x48 pattern.				
Hat Channel	2997.2 by 60.3	1.0	N/A	18.28 m <sup>2</sup>	10.35 kg/m
	Note: The steel hat channel was inserted into the sound isolation clips. The metal thickness was 1 mm.				
Glass mineral wool Insulation	2962 by 584	88.9	Knauf with ECOSE R-13 faced	11.15 m <sup>2</sup>	1.32 kg/m <sup>2</sup>
	Note: Loose laid onto the ceiling grid system				
Gypsum Panel	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C core	10.56 m <sup>2</sup>	11.23 kg/m <sup>2</sup>
	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



<b>TEST DATE</b>	8/16/2018				
<b>DATA FILE NO.</b>	I7419.02				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	8.2 mm Daltile Ceramic Tile, 10 mm Regupol America Sound Control Underlayment, 203.2 mm 5000 PSI Concrete Slab, 28.6 mm Regupol SonusClips Sound Isolation Clip, 1 mm Hat Channel, 88.9 mm Knauf with ECOSE R-13 faced Glass mineral wool Insulation, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Receive Temp.</b>	68.1°C	<b>Source Temp.</b>	72.6°C
<b>TECHNICIAN</b>	LSH	<b>Receive Humidity</b>	54%	<b>Source Humidity</b>	56%

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
80	26.3	10.1	100	66	35	2.7	-
100	24.5	7.6	104	65	41	1.9	-
125	23.4	5.0	101	65	39	1.1	4
160	18.6	5.7	100	61	41	1.0	5
200	14.3	6.2	98	57	44	0.9	5
250	13.7	6.3	97	53	47	0.8	5
315	12.5	7.2	100	52	50	0.9	5
400	12.0	7.0	102	50	54	0.7	4
500	11.0	6.1	100	45	58	0.7	1
630	9.9	6.1	96	35	63	0.3	0
800	11.1	6.1	95	32	65	0.4	0
1000	8.7	6.0	96	29	70	0.5	
1250	8.1	6.1	98	29	72	0.3	0
1600	6.5	6.5	97	27	73	0.3	0
2000	3.9	7.2	98	26	73	0.3	0
2500	4.1	8.2	98	25	75	0.2	0
3150	5.1	8.7	98	21	78	0.3	0
4000	6.3	10.0	97	18	80	0.3	0
5000	5.9	12.1	95	12	82	0.5	-
6300	6.2	15.3	93	12	80	0.6	-
8000	6.6	19.9	94	9	82	0.6	-
10000	6.7	25.4	93	8	82	0.6	-
<b>STC Rating</b>	<b>59</b>	<i>(Sound Transmission Class)</i>			<b>Sum of Deficiencies</b>	<b>29</b>	

- 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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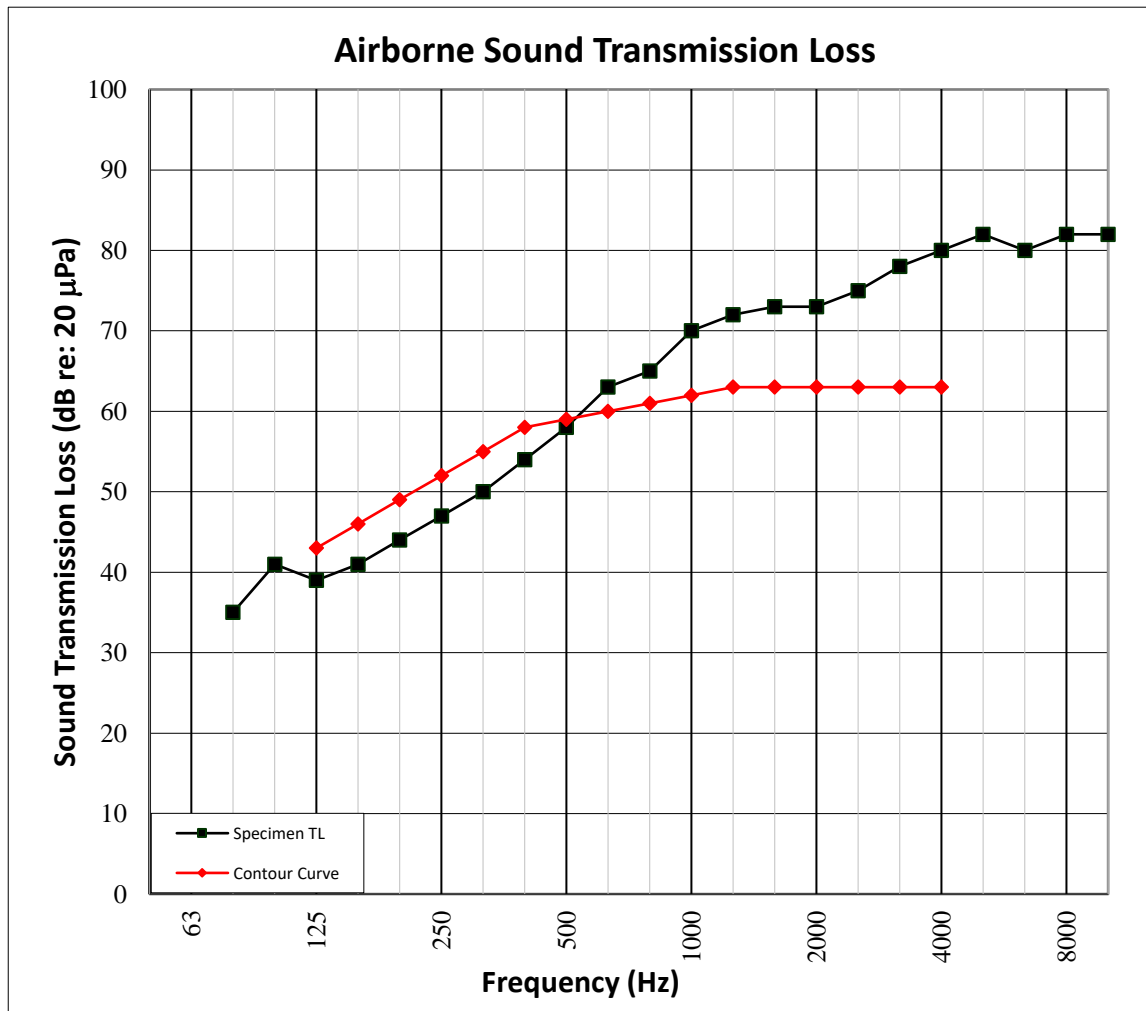
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### SECTION 11

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



<b>TEST DATE</b>	8/16/2018				
<b>DATA FILE NO.</b>	I7419.02				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	8.2 mm Daltile Ceramic Tile, 10 mm Regupol America Sound Control Underlayment, 203.2 mm 5000 PSI Concrete Slab, 28.6 mm Regupol SonusClips Sound Isolation Clip, 1 mm Hat Channel, 88.9 mm Knauf with ECOSE R-13 faced Glass mineral wool Insulation, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Receive Temp.</b>	68.1°C	<b>Source Temp.</b>	72.6°C
<b>TECHNICIAN</b>	LSH	<b>Receive Humidity</b>	54%	<b>Source Humidity</b>	56%





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### SECTION 12

#### TEST RESULTS - IMPACT SOUND TRANSMISSION



<b>TEST DATE</b>	8/16/2018				
<b>DATA FILE NO.</b>	I7419.02				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	8.2 mm Daltile Ceramic Tile, 10 mm Regupol America Sound Control Underlayment, 203.2 mm 5000 PSI Concrete Slab, 28.6 mm Regupol SonusClips Sound Isolation Clip, 1 mm Hat Channel, 88.9 mm Knauf with ECOSE R-13 faced Glass mineral wool Insulation, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	68.1°C	<b>Minimum Temp.</b>	72.6°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	54%	<b>Min. Humidity</b>	56%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	26.6	8.0	61	2.0	-
100	26.7	8.0	58	1.3	7
125	25.2	5.1	56	1.4	5
160	19.6	5.5	54	1.0	3
200	14.2	6.1	55	0.7	4
250	12.5	6.5	55	0.6	4
315	11.8	7.3	53	0.5	2
400	10.8	7.3	51	0.3	1
500	9.6	6.1	51	0.4	2
630	8.1	6.1	47	0.3	0
800	7.8	6.1	43	0.2	0
1000	6.8	6.0	39	0.2	0
1250	6.4	6.1	34	0.2	0
1600	4.9	6.5	31	0.4	0
2000	4.5	7.3	26	0.4	0
2500	4.9	8.2	22	0.3	0
3150	5.8	8.8	18	0.3	0
4000	6.5	10.0	16	0.6	-
5000	6.1	12.2	11	0.6	-
6300	6.3	15.5	7	0.2	-
8000	6.6	19.9	8	0.3	-
10000	6.7	25.6	9	0.3	-
<b>IIC Rating</b>	<b>61</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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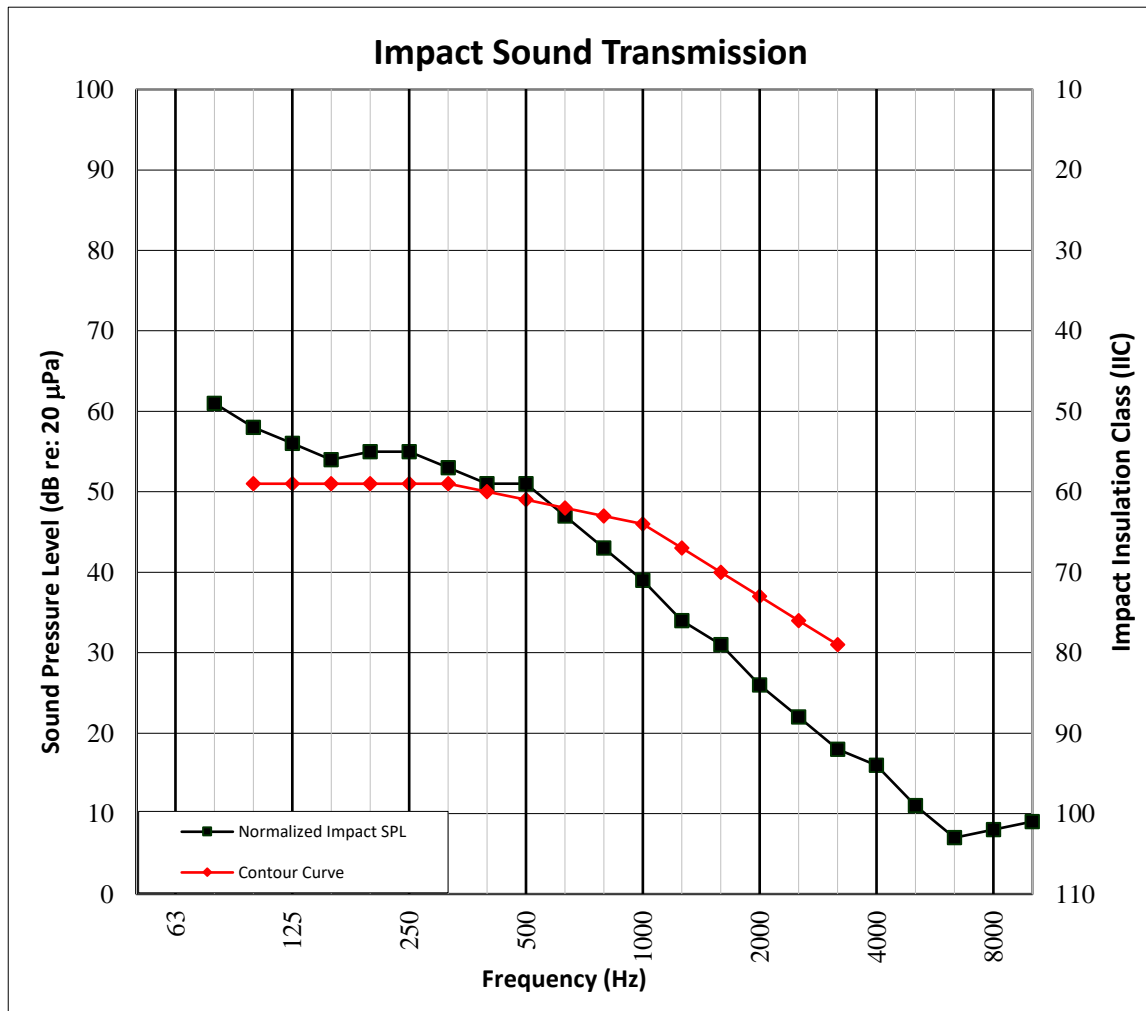
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### SECTION 13

#### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



<b>TEST DATE</b>	8/16/2018				
<b>DATA FILE NO.</b>	I7419.02				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	8.2 mm Daltile Ceramic Tile, 10 mm Regupol America Sound Control Underlayment, 203.2 mm 5000 PSI Concrete Slab, 28.6 mm Regupol SonusClips Sound Isolation Clip, 1 mm Hat Channel, 88.9 mm Knauf with ECOSE R-13 faced Glass mineral wool Insulation, 15.9 mm USG SHEETROCK® Brand FIRECODE® C core Gypsum Panel				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	68.1°C	<b>Minimum Temp.</b>	72.6°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	54%	<b>Min. Humidity</b>	56%



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### SECTION 14

#### PHOTOGRAPHS



Photo No. 1

Source Room View of Test Specimen Installation



Photo No. 2

Receive Room View of Test Specimen Installation

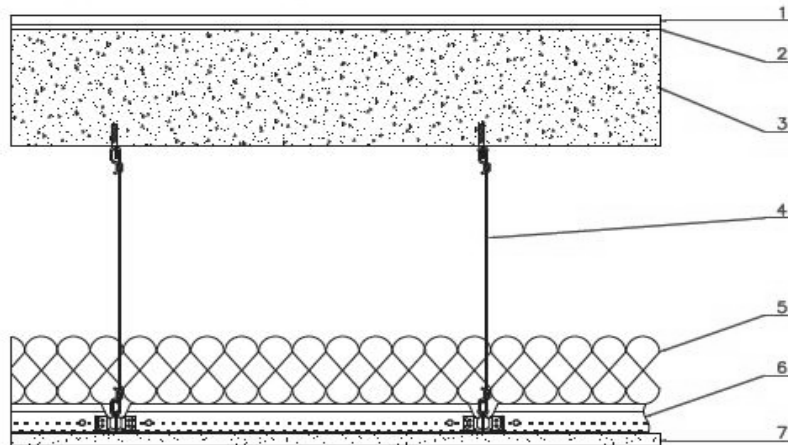
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### SECTION 15

#### DRAWING



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



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### SECTION 16

#### REVISION LOG

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