

# REGUPOL AMERICA

# ACOUSTICAL

# PERFORMANCE

# TEST REPORT

## SCOPE OF WORK

ASTM E90, ASTM E492, AND ASTM E2179 TESTING ON 4X SOUNDPANEL BARE

## SPECIMEN TYPE

Concrete Slab - 152 mm

## REPORT NUMBER

H6847.01-303-11-R1

## TEST DATE(S)

11/13/17

## ISSUE DATE      REVISED DATE

01/02/18      05/30/18

## RECORD RETENTION END

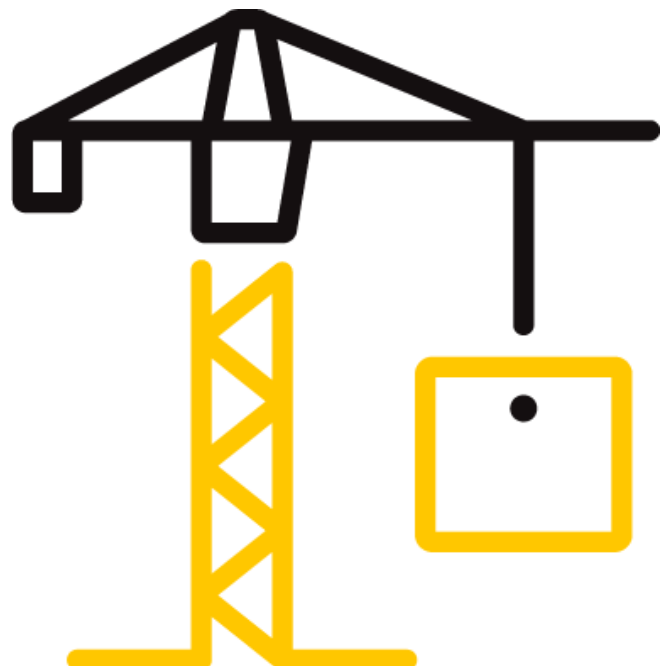
11/13/21

## PAGES

14

## DOCUMENT CONTROL

ATI 00629 (03/21/18)  
RTTDS-R-AMER-Test-2844  
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## TEST REPORT FOR REGUPOL AMERICA

Report No.: H6847.01-303-11-R1

Date: 05/30/18

### REPORT ISSUED TO

#### REGUPOL AMERICA

11 Ritter Way

Lebanon, Pennsylvania 17402

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Regupol America to perform testing in accordance with ASTM E90, ASTM E492, AND ASTM E2179 on 4x Soundpanel Bare. 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>	H6847.01
<b>SERIES/MODEL:</b>	4x Soundpanel Bare
<b>STC</b>	62
<b>IIC</b>	58
<b><math>\Delta</math>IIC</b>	22

**COMPLETED BY:** Leeland S. Hoover  
**TITLE:** Technician I - Acoustical Testing  
**SIGNATURE:**  
**DATE:** 05/30/18

**COMPLETED BY:** Bradley D. Hunt  
**TITLE:** Laboratory Manager - Acoustical Testing  
**SIGNATURE:**  
**DATE:** 05/30/18

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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 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) 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 4310.1 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.

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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	07/17 *
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	10/17
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	10/17
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>	183.69 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

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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
Plywood	3048 by 1219.2	18.0	N/A	11.15 m <sup>2</sup>	9.18 kg/m <sup>2</sup>
	Note: The plywood was fastened with 41.3 mm drywall screws at 305 mm on center				
4x Soundpanel	1219.2 by 1219	67.5	Regupol	11.15 m <sup>2</sup>	11.18 kg/m <sup>2</sup>
	Note: The panel was made up of 15.71 mm thick OSB, 25 mm thick insulation and 51.8 mm thick rubber blocks				
Concrete Slab	3023 by 3632	152.4	5000 PSI	11.15 m <sup>2</sup>	366.18 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.				

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### SECTION 10

### TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Receive Temp.</b>	21.1°C	<b>Source Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Receive Humidity</b>	45%	<b>Source Humidity</b>	45%

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	22.6	5.9	99	68	33	2.5	-
100	23.5	7.1	101	67	36	3.1	-
125	23.8	4.5	101	66	39	1.1	7
160	17.6	5.4	101	58	46	0.8	3
200	11.1	6.5	101	58	45	1.1	7
250	10.7	7.1	99	50	51	0.8	4
315	9.1	7.3	101	47	57	0.7	1
400	10.8	7.5	102	46	58	0.6	3
500	12.4	6.1	101	43	60	0.5	2
630	7.3	6.3	97	33	66	0.5	0
800	5.8	6.3	96	31	68	0.3	0
1000	6.7	6.2	97	27	72	0.3	0
1250	4.2	6.3	99	27	74	0.3	0
1600	3.0	6.8	99	24	76	0.4	0
2000	3.7	7.5	99	23	77	0.3	0
2500	4.2	8.4	100	23	78	0.3	0
3150	5.4	9.4	100	20	80	0.4	0
4000	5.5	11.0	99	16	83	0.5	0
5000	5.3	13.7	96	11	84	0.5	-
6300	5.8	18.1	95	11	82	0.4	-
8000	6.1	24.3	95	9	83	0.4	-
10000	6.3	31.0	94	7	83	0.2	-
<b>STC Rating</b>	<b>62</b>	<i>(Sound Transmission Class)</i>			<b>Sum of Deficiencies</b>	<b>27</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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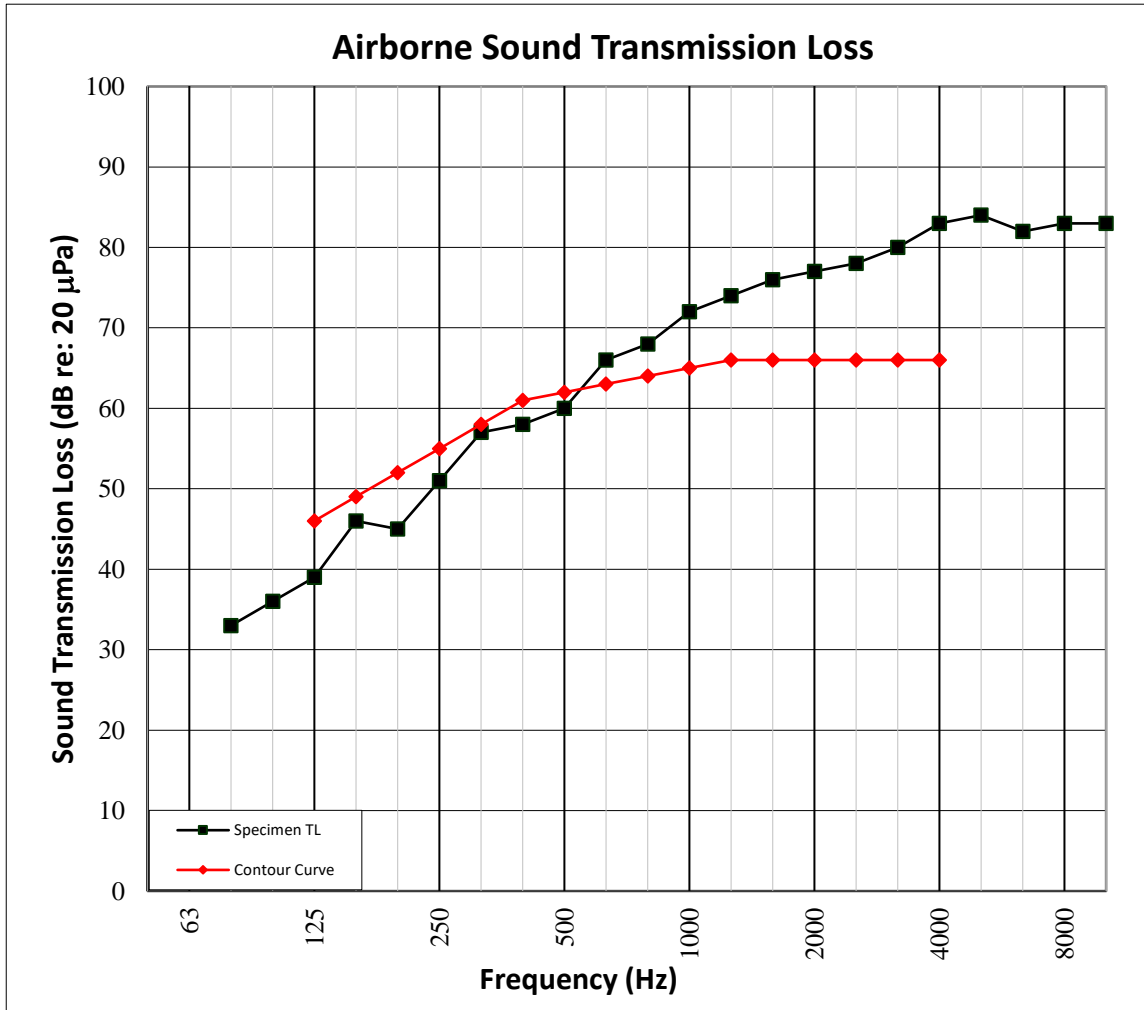
Date: 05/30/18

### SECTION 11

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



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Receive Temp.</b>	21.1°C	<b>Source Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Receive Humidity</b>	45%	<b>Source Humidity</b>	45%





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### SECTION 12

#### TEST RESULTS - IMPACT SOUND TRANSMISSION



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	21.1°C	<b>Minimum Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	45%	<b>Min. Humidity</b>	45%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	25.0	6.2	61	2.1	-
100	24.0	6.7	62	1.1	8
125	23.6	4.3	61	0.6	7
160	18.2	5.3	60	0.8	6
200	11.7	6.3	59	0.6	5
250	11.7	6.8	54	0.5	0
315	11.8	7.6	50	0.4	0
400	11.8	7.3	49	0.4	0
500	12.4	6.1	45	0.2	0
630	7.3	6.3	42	0.3	0
800	6.5	6.2	36	0.3	0
1000	6.8	6.1	30	0.4	0
1250	3.8	6.3	24	0.3	0
1600	3.0	6.8	19	0.3	0
2000	3.5	7.5	16	0.3	0
2500	4.1	8.4	9	0.3	0
3150	5.9	9.3	7	0.3	0
4000	5.6	11.0	5	0.4	-
5000	5.4	13.8	5	0.5	-
6300	5.8	17.9	6	0.5	-
8000	6.1	24.5	8	0.4	-
10000	6.4	31.7	9	0.3	-
<b>IIC Rating</b>	<b>58</b>	<i>(Impact Insulation Class)</i>		<b>Sum of Deficiencies</b>	<b>26</b>

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

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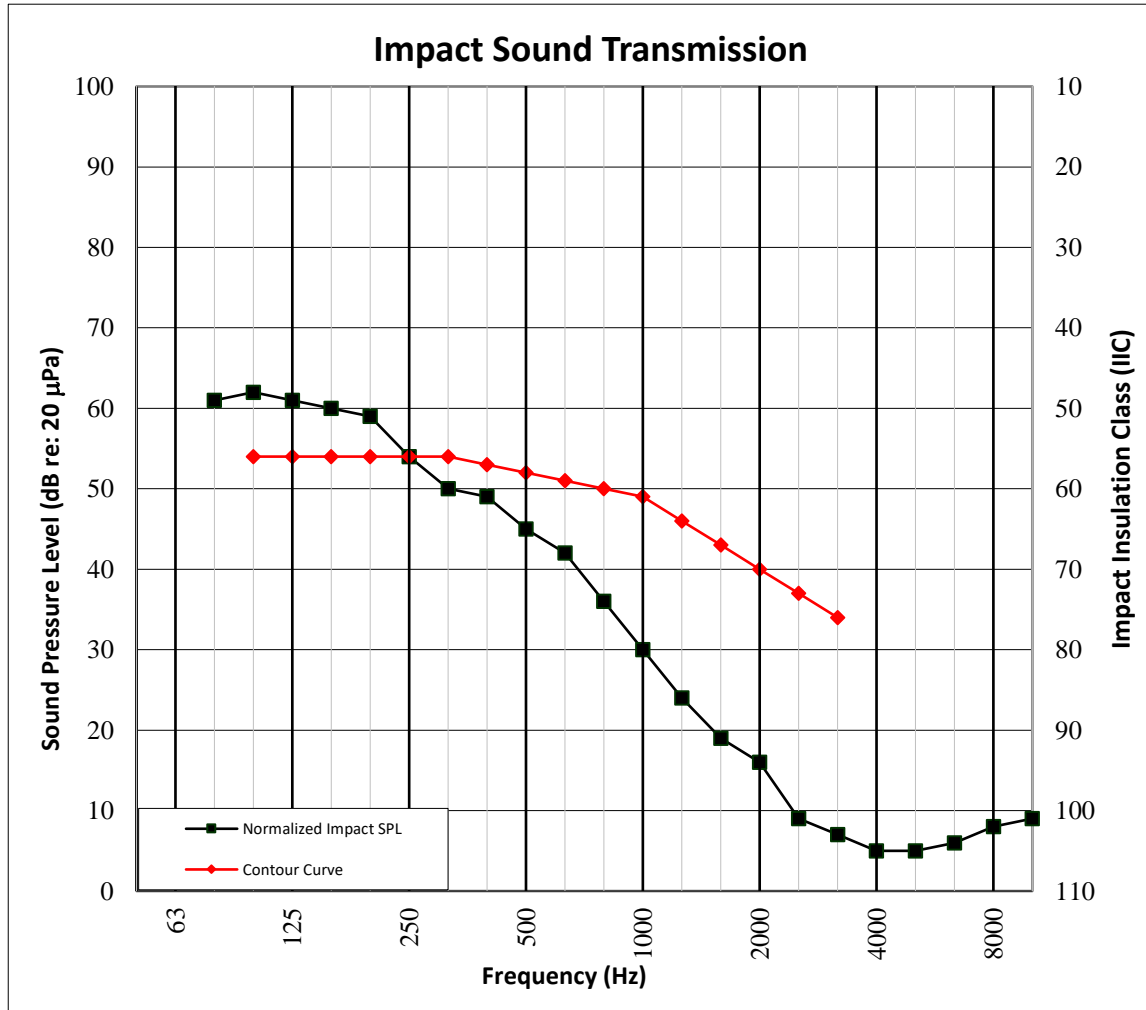
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### SECTION 13

### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	21.1°C	<b>Minimum Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	45%	<b>Min. Humidity</b>	45%



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### SECTION 14

#### TEST RESULTS - DELTA IMPACT INSULATION



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	21.1°C	<b>Minimum Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	45%	<b>Min. Humidity</b>	45%

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	24.0	6.7	58.8	1.6	62.3	1.3	70.0	8
125	23.6	4.3	62.3	1.6	60.7	0.7	66.0	4
160	18.2	5.3	66.8	0.7	60.0	0.9	61.0	0
200	11.7	6.3	69.9	0.8	59.0	0.7	58.0	0
250	11.7	6.8	71.1	1.2	54.2	0.6	52.0	0
315	11.8	7.6	70.5	1.1	50.2	0.5	49.0	0
400	11.8	7.3	71.0	0.6	48.9	0.5	48.0	0
500	12.4	6.1	69.2	0.4	44.9	0.2	46.0	0
630	7.3	6.3	72.1	0.4	42.1	0.4	41.0	0
800	6.5	6.2	71.8	0.4	36.2	0.3	36.0	0
1000	6.8	6.1	72.7	0.4	29.7	0.5	29.0	0
1250	3.8	6.3	74.1	0.6	24.2	0.4	22.0	0
1600	3.0	6.8	74.0	0.3	19.4	0.4	17.0	0
2000	3.5	7.5	74.7	0.4	15.8	0.3	13.0	0
2500	4.1	8.4	74.9	0.4	9.0	0.4	6.0	0
3150	5.9	9.3	75.4	0.5	6.6	0.4	3.0	0
<b>ΔIIC Rating</b>	<b>22</b>	<i>(Delta Impact Insulation Class)</i>			<b>Sum of Deficiencies</b>		<b>12</b>	

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

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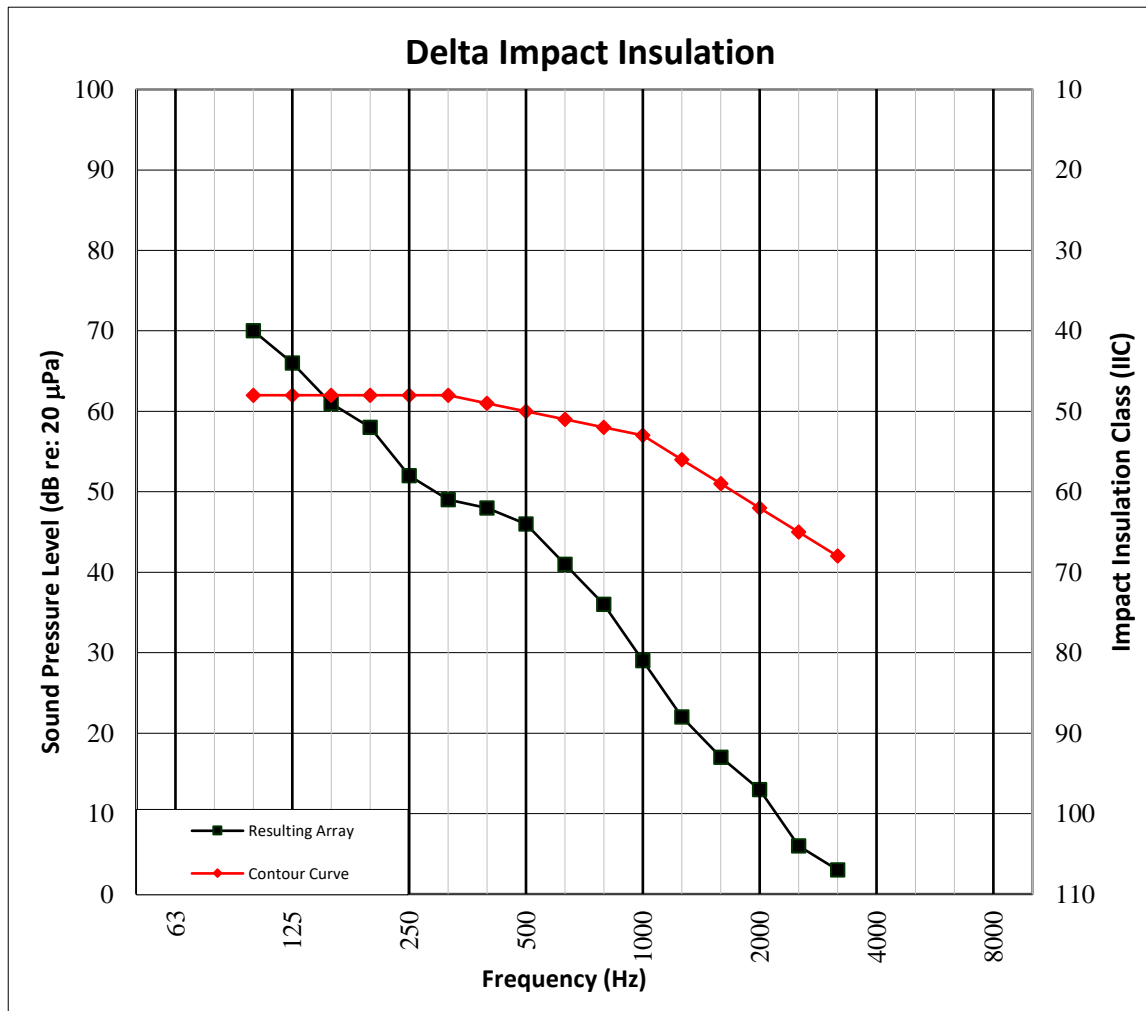
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### SECTION 15

#### TEST RESULTS - DELTA IMPACT INSULATION GRAPH



<b>TEST DATE</b>	11/13/2017				
<b>DATA FILE NO.</b>	H6847.01				
<b>CLIENT</b>	Regupol America				
<b>DESCRIPTION</b>	17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	11.15 m <sup>2</sup>	<b>Maximum Temp.</b>	21.1°C	<b>Minimum Temp.</b>	21.1°C
<b>TECHNICIAN</b>	LSH	<b>Max. Humidity</b>	45%	<b>Min. Humidity</b>	45%



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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**

**REVISION LOG**

REVISION #	DATE	PAGES	DESCRIPTION
R0	01/02/18	N/A	Original Report Issue
R1	05/30/18	All	Added ASTM E2179 Test Data