# REGUPOL AMERICA
# ACOUSTICAL PERFORMANCE TEST REPORT

**SCOPE OF WORK**
ASTM E90 AND ASTM E492 TESTING ON 4X SOUNDPANEL WITH SONUS 3MM UNDERLAYMENT AND HARDWOOD BAMBOO FLOORING

**SPECIMEN TYPE**
Concrete Slab - 152 mm

**REPORT NUMBER**
H6847.03-303-11-R0

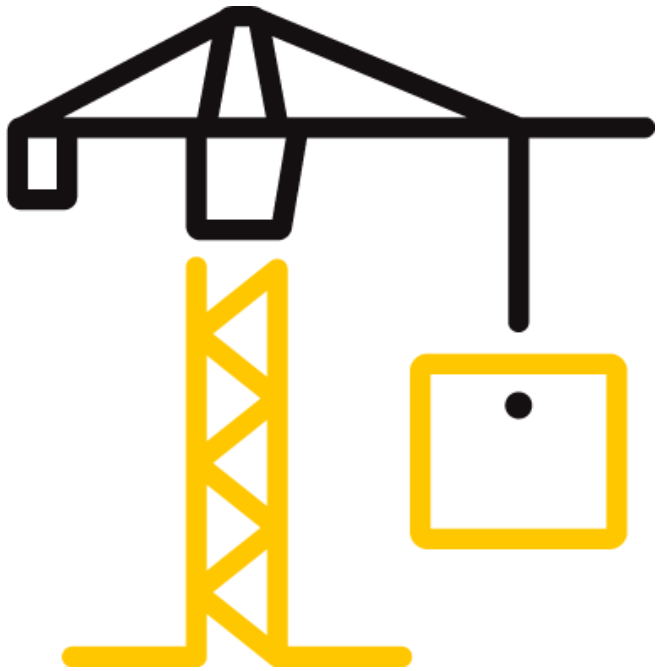
**TEST DATE(S)**
11/14/17

**ISSUE DATE**
01/03/18

**RECORD RETENTION END**
11/14/21

**PAGES**
12

**DOCUMENT CONTROL**
ATI 00629 (09/19/17)
RTTDS-R-AMER-Test-2844

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# TEST REPORT FOR REGUPOL AMERICA

Report No.: H6847.03-303-11-R0
Date: 01/03/18

## REPORT ISSUED TO

**REGUPOL AMERICA**
11 Ritter Way
Lebanon, Pennsylvania 17402

## SECTION 1

**SCOPE**

Intertek Building & Construction (B&C) was contracted by to perform testing in accordance with ASTM E90 AND ASTM E492 on 4x SoundPanel with Sonus 3mm underlayment and Hardwood Bamboo Flooring. 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**

| | |
|---|---|
| **DATA FILE NO.** | H6847.03 |
| **SERIES/MODEL:** | 4x SoundPanel with Sonus 3mm underlayment and Hardwood Bamboo Floo |
| **STC** | 62 |
| **IIC** | 62 |

| | | | |
|---|---|---|---|
| **COMPLETED BY:** | Leeland S. Hoover | **COMPLETED BY:** | Bradlay D. Hunt |
| **TITLE:** | Technician I | **TITLE:** | Laboratory Manager |
| **SIGNATURE:** | Digitally Signed by: Leeland Hoover | **SIGNATURE:** | Digitally Signed by: Bradlay Hunt |
| **DATE:** | 01/03/18 | **DATE:** | 01/03/18 |

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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 (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 4468.6 kg. 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.

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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**TEST REPORT FOR REGUPOL AMERICA**
Report No.: H6847.03-303-11-R0
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## SECTION 5
## EQUIPMENT

| INSTRUMENT | MANUFACTURER | MODEL | DESCRIPTION | ASSET # | CAL DATE |
|---|---|---|---|---|---|
| Data Acquisition Unit | National Instruments | PXI-1033 | Data Acquisition Card | INT00392 | 10/17 * |
| Microphone Calibrator | Norsonic | 1251 | Pistonphone calibrator | INT00289 | 07/17 |
| Receive Room Microphone | PCB Piezotronics | 378C20 | Microphone and Preamplifier | INT00229 | 03/17 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00230 | 03/17 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00231 | 03/17 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00232 | 03/17 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00233 | 03/17 |
| Receive Room Environmental Indicator | Comet | T7510 | Temperature and Humidity Transmitter | INT00299 | 10/17 |
| Source Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00234 | 03/17 |
| Source Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00235 | 03/17 |
| Source Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00236 | 03/17 |
| Source Room Microphone | PCB Piezotronics | 378B20 | Microphone and Preamplifier | INT00237 | 03/17 |
| Source Room Microphone | PCB Electronics | 378B20 | Microphone and Preamplifier | INT00238 | 03/17 |
| Source Room Environmental Indicator | Comet | T7510 | Temperature and Humidity Transmitter | INT00300 | 10/17 |
| Tapping Machine | Look Line s.r.l. | EM50 (TM50) | Tapping Machine | INT00225 | 07/17 |

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

| | |
|---|---|
| **VT RECEIVE ROOM VOLUME** | 183.69 $m^3$ |
| **VT SOURCE ROOM VOLUME** | 129.4 $m^3$ |

## SECTION 6
## LIST OF OFFICIAL OBSERVERS

| NAME | COMPANY |
|---|---|
| Bill Devin | Regupol America |
| 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 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.

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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**TEST REPORT FOR REGUPOL AMERICA**
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## SECTION 9
## TEST SPECIMEN DESCRIPTION

| MATERIAL | DIMENSIONS (mm/inch) | THICKNESS (mm/inch) | MANUFACTURER AND SERIES | QUANTITY | AVERAGE WEIGHT |
|---|---|---|---|---|---|
| Bamboo Flooring | 914.4 by 127 | 10.0 | Hardwood | 11.15 m² | 11.96 kg/m² |
| | Note: Loose laid | | | | |
| Rubber Underlayment | 2794 by 1219 | 3.1 | Regupol 3mm Sonus | 11.15 m² | 2.25 kg/m² |
| | Note: Loose laid | | | | |
| Plywood | 3048 by 1219.2 | 18.0 | N/A | 11.15 m² | 9.18 kg/m² |
| | Note: The plywood was fastened with 1-5/8" drywall screws at 12" on center | | | | |
| 4x Soundpanel | 1219.2 by 1219.2 | 67.5 | Regupol | 11.15 m² | 11.18 kg/m² |
| | Note: The panel was made up of 15.71mm thick OSB, 25mm thick insulation and 51.8mm thick rubber blocks | | | | |
| Concrete Slab | 3023 by 3632 | 152.4 | 5000 PSI | 11.15 m² | 366.18 kg/m² |
| | 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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Report No.: H6847.03-303-11-R0
Date: 01/03/18

## SECTION 10

## TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS

ACCREDITED Testing Laboratory

| | | | | | |
|---|---|---|---|---|---|
| **TEST DATE** | 11/14/2017 | | | | |
| **DATA FILE NO.** | H6847.03 | | | | |
| **CLIENT** | Regupol America | | | | |
| **DESCRIPTION** | 9.99 mm Hardwood Bamboo Flooring, 3.06 mm Regupol 3mm Sonus Rubber Underlayment, 17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab | | | | |
| **SPECIMEN AREA** | 11.15 m² | **Receive Temp.** | 21.1 | **Source Temp.** | 21.1 |
| **TECHNICIAN** | LSH | **Receive Humidity** | 45% | **Source Humidity** | 45% |

| FREQ (Hz) | BACKGROUND SPL (dB) | ABSORPTION m² | SOURCE SPL (dB) | RECEIVE SPL (dB) | SPECIMEN TL (dB) | 95% CONFIDENCE LIMIT | NUMBER OF DEFICIENCIES |
|---|---|---|---|---|---|---|---|
| 80 | 23.9 | 5.6 | 101 | 67 | 37 | 3.4 | - |
| 100 | 22.8 | 6.7 | 103 | 67 | 38 | 2.8 | - |
| 125 | 26.2 | 4.6 | 102 | 67 | 39 | 1.5 | 7 |
| 160 | 17.4 | 5.3 | 102 | 58 | 47 | 0.9 | 2 |
| 200 | 12.4 | 6.3 | 101 | 57 | 46 | 1.2 | 6 |
| 250 | 10.4 | 6.9 | 99 | 50 | 51 | 0.8 | 4 |
| 315 | 6.2 | 7.5 | 102 | 47 | 57 | 0.9 | 1 |
| 400 | 5.0 | 7.5 | 102 | 47 | 56 | 0.9 | 5 |
| 500 | 7.3 | 6.1 | 100 | 43 | 60 | 0.6 | 2 |
| 630 | 4.8 | 6.3 | 96 | 32 | 67 | 0.5 | 0 |
| 800 | 4.0 | 6.3 | 96 | 30 | 68 | 0.5 | 0 |
| 1000 | 5.1 | 6.4 | 97 | 27 | 72 | 0.5 | 0 |
| 1250 | 2.2 | 6.3 | 99 | 27 | 74 | 0.4 | 0 |
| 1600 | 1.9 | 6.8 | 99 | 24 | 77 | 0.3 | 0 |
| 2000 | 2.6 | 7.5 | 99 | 24 | 77 | 0.3 | 0 |
| 2500 | 3.7 | 8.3 | 100 | 23 | 78 | 0.3 | 0 |
| 3150 | 5.1 | 9.2 | 100 | 21 | 80 | 0.2 | 0 |
| 4000 | 5.6 | 10.7 | 99 | 18 | 81 | 0.3 | 0 |
| 5000 | 5.2 | 13.3 | 96 | 13 | 83 | 0.4 | - |
| 6300 | 5.8 | 17.3 | 95 | 11 | 81 | 0.3 | - |
| 8000 | 6.2 | 22.9 | 95 | 9 | 83 | 0.4 | - |
| 10000 | 6.3 | 29.7 | 94 | 8 | 82 | 0.3 | - |
| **STC Rating** | **62** | *(Sound Transmission Class)* | | | **Sum of Deficiencies** | | **27** |

***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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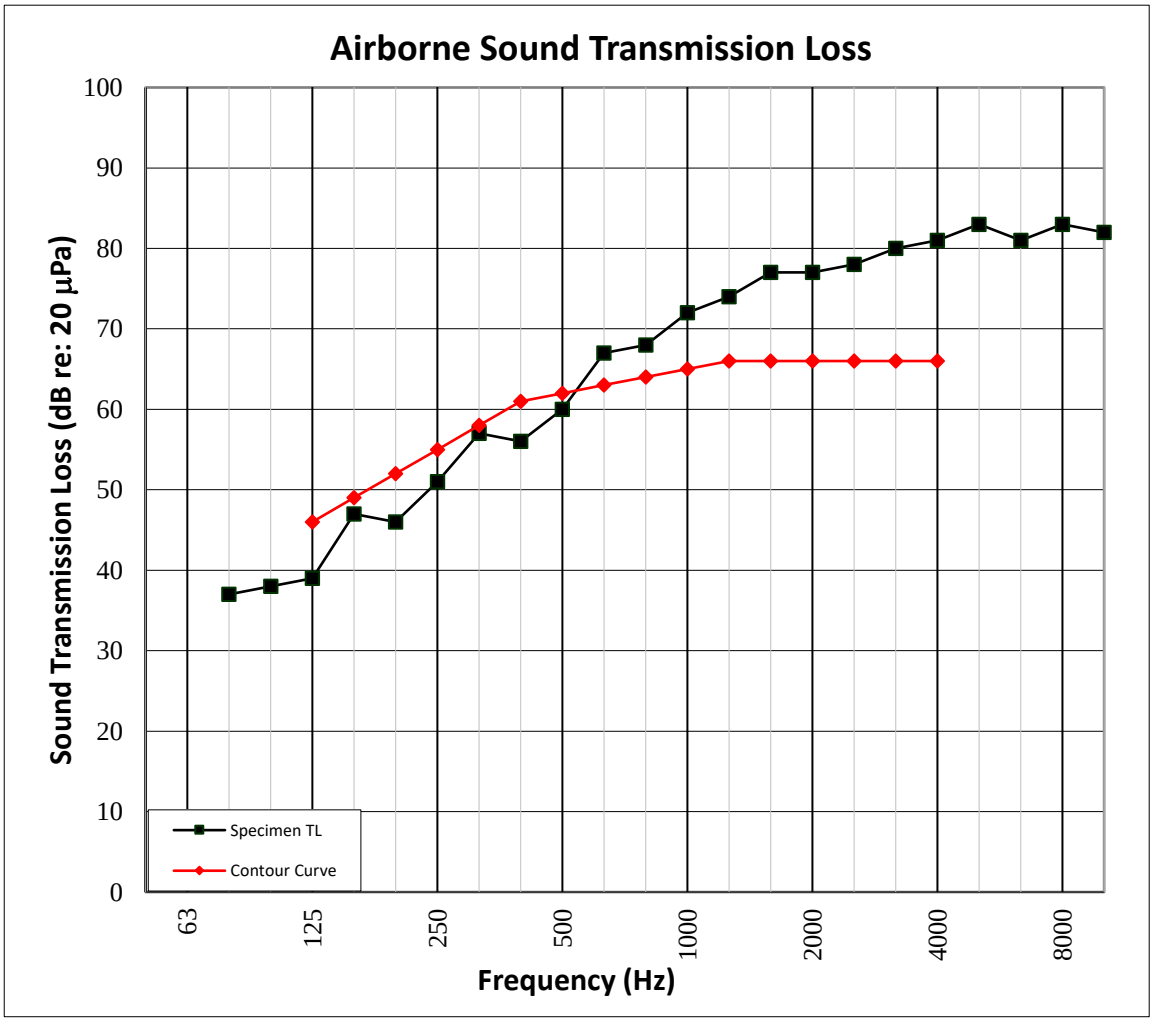
Date: 01/03/18

## SECTION 11
### TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH

ACCREDITED Testing Laboratory

| | | | | | |
|---|---|---|---|---|---|
| **TEST DATE** | 11/14/2017 | | | | |
| **DATA FILE NO.** | H6847.03 | | | | |
| **CLIENT** | Regupol America | | | | |
| **DESCRIPTION** | 9.99 mm Hardwood Bamboo Flooring, 3.06 mm Regupol 3mm Sonus Rubber Underlayment, 17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab | | | | |
| **SPECIMEN AREA** | 11.15 m² | **Receive Temp.** | 21.1 | **Source Temp.** | 21.1 |
| **TECHNICIAN** | LSH | **Receive Humidity** | 45% | **Source Humidity** | 45% |



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Date: 01/03/18

## SECTION 12

## TEST RESULTS - IMPACT SOUND TRANSMISSION

ACCREDITED Testing Laboratory

| | | | | | |
|---|---|---|---|---|---|
| **TEST DATE** | 11/14/2017 | | | | |
| **DATA FILE NO.** | H6847.03 | | | | |
| **CLIENT** | Regupol America | | | | |
| **DESCRIPTION** | 9.99 mm Hardwood Bamboo Flooring, 3.06 mm Regupol 3mm Sonus Rubber Underlayment, 17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab | | | | |
| **SPECIMEN AREA** | 11.15 m² | **Maximum Temp.** | 21.1 | **Minimum Temp.** | 21.1 |
| **TECHNICIAN** | LSH | **Max. Humidity** | 45% | **Min. Humidity** | 45% |

| **FREQ** (Hz) | **BACKGROUND SPL** (dB) | **ABSORPTION** m² | **NORMALIZED IMPACT SPL** (dB) | **95% CONFIDENCE LIMIT** | **NUMBER OF DEFICIENCIES** |
|---|---|---|---|---|---|
| 80 | 33.3 | 5.7 | 57 | 1.9 | - |
| 100 | 28.4 | 6.7 | 58 | 1.2 | 8 |
| 125 | 26.1 | 4.5 | 56 | 1.0 | 6 |
| 160 | 18.5 | 5.6 | 55 | 0.7 | 5 |
| 200 | 12.5 | 6.5 | 55 | 0.5 | 5 |
| 250 | 10.5 | 6.8 | 50 | 0.6 | 0 |
| 315 | 6.2 | 7.5 | 46 | 0.5 | 0 |
| 400 | 5.7 | 7.0 | 43 | 0.4 | 0 |
| 500 | 8.3 | 6.2 | 38 | 0.2 | 0 |
| 630 | 4.9 | 6.2 | 34 | 0.4 | 0 |
| 800 | 3.0 | 6.2 | 27 | 0.2 | 0 |
| 1000 | 6.7 | 6.2 | 22 | 0.3 | 0 |
| 1250 | 4.4 | 6.4 | 18 | 0.4 | 0 |
| 1600 | 3.2 | 6.8 | 14 | 0.2 | 0 |
| 2000 | 3.6 | 7.5 | 11 | 0.4 | 0 |
| 2500 | 4.7 | 8.3 | 8 | 0.3 | 0 |
| 3150 | 4.8 | 9.2 | 7 | 0.4 | 0 |
| 4000 | 5.4 | 10.7 | 5 | 0.4 | - |
| 5000 | 5.1 | 13.3 | 5 | 0.5 | - |
| 6300 | 5.7 | 17.2 | 6 | 0.5 | - |
| 8000 | 6.2 | 23.2 | 8 | 0.4 | - |
| 10000 | 6.4 | 29.6 | 9 | 0.2 | - |
| **IIC Rating** | **62** | *(Impact Insulation Class)* | | **Sum of Deficiencies** | **24** |

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

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## TEST REPORT FOR REGUPOL AMERICA

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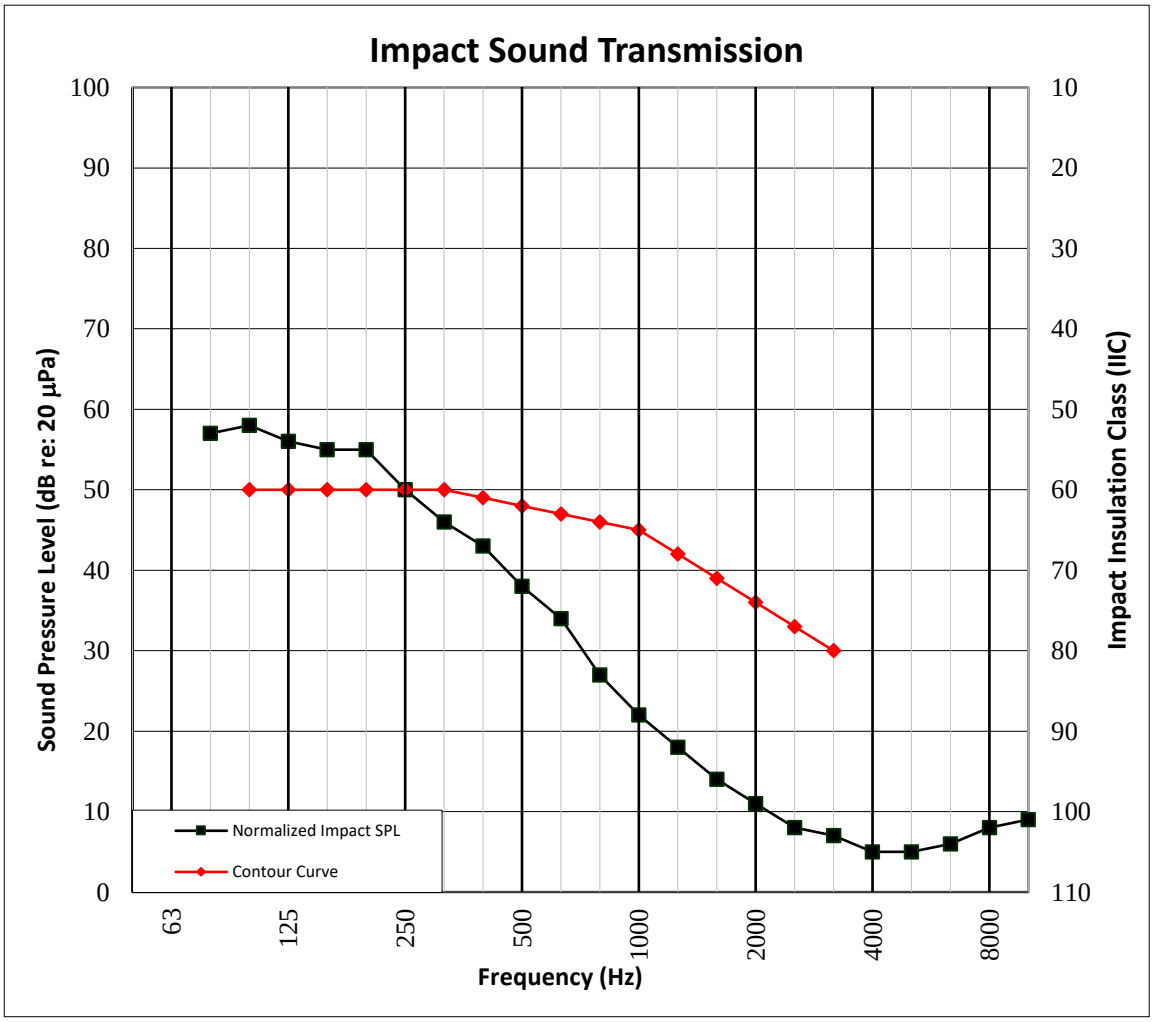
Date: 01/03/18

### SECTION 13

### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH

ACCREDITED Testing Laboratory

| | | | | | |
|---|---|---|---|---|---|
| **TEST DATE** | 11/14/2017 | | | | |
| **DATA FILE NO.** | H6847.03 | | | | |
| **CLIENT** | Regupol America | | | | |
| **DESCRIPTION** | 9.99 mm Hardwood Bamboo Flooring, 3.06 mm Regupol 3mm Sonus Rubber Underlayment, 17.98 mm Plywood, 67.51 mm Regupol 4x Soundpanel, 152.4 mm 5000 PSI Concrete Slab | | | | |
| **SPECIMEN AREA** | 11.15 m² | **Maximum Temp.** | 21.1 | **Minimum Temp.** | 21.1 |
| **TECHNICIAN** | LSH | **Max. Humidity** | 45% | **Min. Humidity** | 45% |



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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 16
## REVISION LOG

| REVISION # | DATE | PAGES | DESCRIPTION |
|---|---|---|---|
| R0 | 01/03/18 | N/A | Original Report Issue |