



**E1550.02-113-11-R0**  
**ACOUSTICAL PERFORMANCE TEST REPORT**  
**ASTM E 90 AND ASTM E 492**

**Rendered to**

**REGUPOL AMERICA**

**Series/Model: 6 mm Regupol Sonus Rubber Underlayment**

**Specimen Type: Floor/Ceiling Assembly**

**Overall Size: 3023 mm by 3632 mm**

**STC     60**  
**IIC     57**

**Test Specimen Identification:**

Floor Topping: 11.92 mm Hardwood Flooring

Floor Underlayment: 6 mm Regupol Sonus Rubber Underlayment

Subfloor Topping: 25.4 mm Hacker 3310 Gypsum Concrete Gypsum Concrete

Subfloor: 18.8 mm OSB Sheathing

Insulation: 88.9 mm Knauf EcoBatt® R13 Fiberglass Insulation

Joist: 235 mm 2x10 Dimensional Lumber

Ceiling Isolation: 0.7 mm ClarkDietrich RC Deluxe™ Resilient Channel

Ceiling: 16.3 mm CertainTeed Type C Gypsum Board

Reference should be made to Architectural Testing, Inc. Report E1550.02-113-11 for complete test specimen description.



## Acoustical Performance Test Report

REGUPOL AMERICA  
33 Keystone Drive  
Lebanon, Pennsylvania 17042

|                                  |                 |
|----------------------------------|-----------------|
| <b>Report</b>                    | E1550.02-113-11 |
| <b>Test Date</b>                 | 11/11/14        |
| <b>Report Date</b>               | 01/16/15        |
| <b>Record Retention End Date</b> | 11/11/18        |

### Project Scope

Regupol America contracted Architectural Testing to conduct airborne sound transmission loss and impact sound transmission tests. A summary of the results is listed in the Test Results section, and the complete test data is included as attachments to this report. The client provided the test specimen.

### Test Methods

The acoustical tests were conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

ASTM E 413-10, Classification for Rating Sound Insulation

ASTM E 492-09, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

ASTM E 989-06 (2012), Classification for Determination of Impact Insulation Class (IIC)

ASTM E 2235-04 (2012) Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

### Test Procedure

All testing was conducted in the VT test chambers at Architectural Testing, Inc. located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The airborne transmission loss test was conducted in accordance with the ASTM E 90 test method using a single direction of measurement. Two background noise sound pressure level and twenty 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.

**Test Procedure (Continued)**

The impact sound transmission test was conducted in accordance with the ASTM E 492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492, and twenty sound absorption measurements were conducted at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

**Test Conditions**

| Source Room               |         | Receive Room              |         |
|---------------------------|---------|---------------------------|---------|
| Maximum Temperature       | 17.6 °C | Maximum Temperature       | 18.6 °C |
| Minimum Temperature       | 17.4 °C | Minimum Temperature       | 18.4 °C |
| Average Temperature       | 17.5 °C | Average Temperature       | 18.5 °C |
| Maximum Relative Humidity | 67%     | Maximum Relative Humidity | 66%     |
| Minimum Relative Humidity | 67%     | Minimum Relative Humidity | 64%     |
| Average Relative Humidity | 67%     | Average Relative Humidity | 65%     |

**Test Calculations**

The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E 413 and ASTM E 989, respectively.

**Test Specimen Materials**

| Material                  | Dimensions (mm)   | Thickness (mm) | Manufacturer and Series     | Quantity             | Average Weight          |
|---------------------------|---|----------------|-----------------------------|----------------------|-------------------------|
| Hardwood Flooring         | 914.4 by 139.7  | 11.9           | N/A                         | 10.98 m <sup>2</sup> | 7.62 kg/m <sup>2</sup>  |
|                           | <i>Note: Loose laid.</i>  |                |                             |                      |                         |
| Rubber Underlayment       | 3048 by 1219.2  | 6.0            | Regupol Sonus               | 10.98 m <sup>2</sup> | 4.42 kg/m <sup>2</sup>  |
|                           | <i>Note: Loose laid.</i>  |                |                             |                      |                         |
| Gypsum Concrete           | 3023 by 3632  | 25.4           | Hacker 3310 Gypsum Concrete | 10.98 m <sup>2</sup> | 4.61 kg/m <sup>2</sup>  |
|                           | <i>Note: Poured directly on top of the OSB sheathing, cured a minimum of 14 days.</i>   |                |                             |                      |                         |
| OSB Sheathing             | 1219 by 2438  | 18.8           | N/A                         | 10.98 m <sup>2</sup> | 10.25 kg/m <sup>2</sup> |
|                           | <i>Note: Fastened to joists with 76 mm by 3 mm framing nails on 203 mm centers along perimeter and 305 mm centers in the field.</i> |                |                             |                      |                         |
| R13 Fiberglass Insulation | 2940 by 406   | 88.9           | Knauf EcoBatt®              | 10.98 m <sup>2</sup> | 1.03 kg/m <sup>2</sup>  |
|                           | <i>Note: Laid directly over resilient channels.</i>   |                |                             |                      |                         |

**Test Specimen Materials (Continued)**

| Material                | Dimensions (mm)   | Thickness (mm) | Manufacturer and Series  | Quantity             | Average Weight          |
|-------------------------|---|----------------|--------------------------|----------------------|-------------------------|
| 2x10 Dimensional Lumber | 2940 by 38.1  | 235.0          | N/A                      | 26.5 lin m           | 4.3 kg                  |
|                         | <i>Note: Fastened to perimeter frame on 406 mm centers using 18 gauge joist hangers and 9 gauge 31.75 mm nails.</i> |                |                          |                      |                         |
| Resilient Channel       | 68.6 by 2902  | 0.7            | ClarkDietrich RC Deluxe™ | 23.2 lin m           | 0.72 kg                 |
|                         | <i>Note: Fastened perpendicular to joists on 406 mm centers with 25.4 mm type S screws.</i>                         |                |                          |                      |                         |
| Type C Gypsum Board     | 1219 by 29.3  | 16.3           | CertainTeed              | 10.35 m <sup>2</sup> | 11.65 kg/m <sup>2</sup> |
|                         |   |                |                          |                      |                         |

**Comments**

The total weight of the floor/ceiling assembly was 558 kg. Architectural Testing 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.

Architectural Testing 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 Architectural Testing for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

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Leeland S. Hoover  
Technician II - Acoustical Testing

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Bradlay D. Hunt  
Project Manager - Acoustical Testing

Attachments (7)

*\* Stated by Client/Manufacturer*

*N/A - Non Applicable*



### Revision Log

| <u>Revision</u> | <u>Date</u> | <u>Page(s)</u> | <u>Description</u>    |
|-----------------|-------------|----------------|-----------------------|
| R0              | 01/16/15    | N/A            | Original Report Issue |

## Attachments

### Instrumentation

| Instrument                           | Manufacturer         | Model    | ATI Number | Date of Calibration |
|--------------------------------------|----------------------|----------|------------|---------------------|
| Data Acquisition Unit                | National Instruments | PXI-1033 | 63763      | 06/14 *             |
| Source Room Microphone               | PCB Piezotronics     | 378B20   | 63738      | 04/14               |
| Source Room Microphone               | PCB Piezotronics     | 378B20   | 63739      | 04/14               |
| Source Room Microphone               | PCB Piezotronics     | 378B20   | 63748      | 04/14               |
| Source Room Microphone               | PCB Piezotronics     | 378B20   | 63742      | 04/14               |
| Source Room Microphone               | PCB Piezotronics     | 378B20   | 63741      | 04/14               |
| Receive Room Microphone              | PCB Piezotronics     | 378B20   | 64340      | 04/14               |
| Receive Room Microphone              | PCB Piezotronics     | 378B20   | 63744      | 04/14               |
| Receive Room Microphone              | PCB Piezotronics     | 378B20   | 63745      | 04/14               |
| Receive Room Microphone              | PCB Piezotronics     | 378B20   | 63746      | 04/14               |
| Receive Room Microphone              | PCB Piezotronics     | 378B20   | 63747      | 04/14               |
| Receive Room Environmental Indicator | Comet                | T7510    | 63810      | 09/14               |
| Receive Room Environmental Indicator | Comet                | T7510    | 63811      | 09/14               |
| Source Room Environmental Indicator  | Comet                | T7510    | 63812      | 09/14               |
| Microphone Calibrator                | Norsonic             | 1251     | Y002919    | 06/14               |
| Tapping Machine                      | Norsonic             | N-211    | Y003242    | 03/14               |

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

### Test Chambers

|                        |                      |
|------------------------|----------------------|
| VT Receive Room Volume | 156.5 m <sup>3</sup> |
| VT Source Room Volume  | 190 m <sup>3</sup>   |



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## AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

|                      |  |
|----------------------|--|
| <b>Test Date</b>     | 11/11/14   |
| <b>Data File No.</b> | E1550.02   |
| <b>Client</b>        | Regupol America  |
| <b>Description</b>   | 11.92 mm Hardwood Flooring, 6 mm Regupol Sonus Rubber Underlayment, 25.4 mm Hacker 3310 Gypsum Concrete Gypsum Concrete, 18.8 mm OSB Sheathing, 88.9 mm Knauf EcoBatt® R13 Fiberglass Insulation, 235 mm 2x10 Dimensional Lumber, 0.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 16.3 mm CertainTeed Type C Gypsum Board |
| <b>Specimen Area</b> | 10.98 m <sup>2</sup>   |
| <b>Technician</b>    | Leeland S. Hoover  |

| Freq<br>(Hz) | Background<br>SPL<br>(dB) | Absorption<br>(m <sup>2</sup> ) | Source<br>SPL<br>(dB) | Receive<br>SPL<br>(dB) | Specimen<br>TL<br>(dB) | 95%<br>Confidence<br>Limit | Number<br>of<br>Deficiencies |
|--------------|---------------------------|---------------------------------|-----------------------|------------------------|------------------------|----------------------------|------------------------------|
| 80           | 62.9                      | 15.5                            | 108                   | 67                     | 40                     | 5.00                       | -                            |
| 100          | 49.6                      | 11.1                            | 106                   | 66                     | 41                     | 3.30                       | -                            |
| 125          | 40.3                      | 10.1                            | 105                   | 65                     | 42                     | 2.00                       | 2                            |
| 160          | 37.6                      | 9.4                             | 107                   | 65                     | 43                     | 1.60                       | 4                            |
| 200          | 30.7                      | 10.5                            | 105                   | 59                     | 47                     | 1.80                       | 3                            |
| 250          | 28.0                      | 9.9                             | 104                   | 54                     | 51                     | 1.90                       | 2                            |
| 315          | 28.5                      | 9.5                             | 103                   | 53                     | 52                     | 1.00                       | 4                            |
| 400          | 28.9                      | 7.9                             | 103                   | 51                     | 54                     | 0.80                       | 5                            |
| 500          | 24.6                      | 7.2                             | 103                   | 50                     | 56                     | 0.60                       | 4                            |
| 630          | 26.3                      | 7.2                             | 105                   | 49                     | 59                     | 0.70                       | 2                            |
| 800          | 26.8                      | 7.2                             | 104                   | 47                     | 60                     | 0.50                       | 2                            |
| 1000         | 24.7                      | 6.9                             | 104                   | 45                     | 63                     | 0.60                       | 0                            |
| 1250         | 26.2                      | 7.1                             | 105                   | 42                     | 66                     | 1.40                       | 0                            |
| 1600         | 24.1                      | 7.2                             | 105                   | 41                     | 67                     | 1.40                       | 0                            |
| 2000         | 17.6                      | 7.9                             | 104                   | 39                     | 68                     | 0.70                       | 0                            |
| 2500         | 14.2                      | 8.7                             | 104                   | 38                     | 67                     | 0.50                       | 0                            |
| 3150         | 11.7                      | 9.4                             | 103                   | 35                     | 70                     | 0.80                       | 0                            |
| 4000         | 10.9                      | 10.7                            | 103                   | 31                     | 73                     | 0.90                       | 0                            |
| 5000         | 9.4                       | 12.5                            | 103                   | 28                     | 75                     | 0.80                       | -                            |
| 6300         | 7.0                       | 15.6                            | 98                    | 17                     | 81                     | 1.40                       | -                            |
| 8000         | 8.3                       | 20.7                            | 96                    | 11                     | 84                     | 1.20                       | -                            |
| 10000        | 7.6                       | 27.3                            | 92                    | 6                      | 83                     | 0.90                       | -                            |

**STC Rating**      **60**      (*Sound Transmission Class*)  
**Deficiencies**      **28**      (*Sum of Deficiencies*)

**Notes:**      1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.  
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.  
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

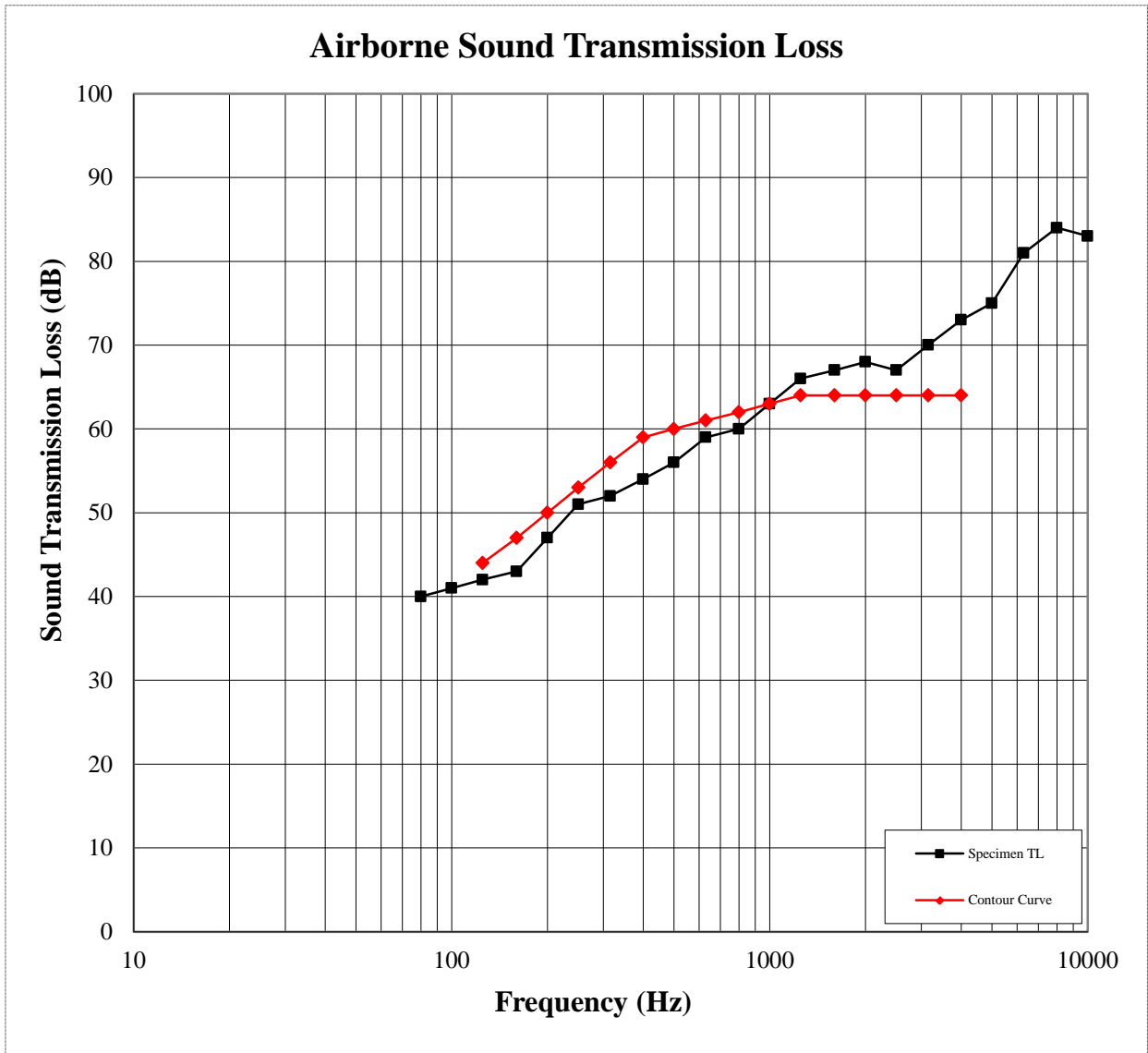


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### AIRBORNE SOUND TRANSMISSION LOSS ASTM E 90

|                      |  |
|----------------------|--|
| <b>Test Date</b>     | 11/11/14   |
| <b>Data File No.</b> | E1550.02   |
| <b>Client</b>        | Regupol America  |
| <b>Description</b>   | 11.92 mm Hardwood Flooring, 6 mm Regupol Sonus Rubber Underlayment, 25.4 mm Hacker 3310 Gypsum Concrete Gypsum Concrete, 18.8 mm OSB Sheathing, 88.9 mm Knauf EcoBatt® R13 Fiberglass Insulation, 235 mm 2x10 Dimensional Lumber, 0.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 16.3 mm CertainTeed Type C Gypsum Board |
| <b>Specimen Area</b> | 10.98 m <sup>2</sup>   |
| <b>Technician</b>    | Leeland S. Hoover  |







E1550.02-113-11-R0



**IMPACT SOUND TRANSMISSION**  
ASTM E 492

|                      |  |
|----------------------|--|
| <b>Test Date</b>     | 11/11/14   |
| <b>Data File No.</b> | E1550.02   |
| <b>Client</b>        | Regupol America  |
| <b>Description</b>   | 11.92 mm Hardwood Flooring, 6 mm Regupol Sonus Rubber Underlayment, 25.4 mm Hacker 3310 Gypsum Concrete Gypsum Concrete, 18.8 mm OSB Sheathing, 88.9 mm Knauf EcoBatt® R13 Fiberglass Insulation, 235 mm 2x10 Dimensional Lumber, 0.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 16.3 mm CertainTeed Type C Gypsum Board |
| <b>Specimen Area</b> | 10.98 m <sup>2</sup>   |
| <b>Technician</b>    | Leeland S. Hoover  |

| <b>Freq</b><br>(Hz) | <b>Background SPL</b><br>(dB) | <b>Absorption</b><br>(m <sup>2</sup> ) | <b>Normalized Impact SPL</b><br>(dB) | <b>95% Confidence Limit</b> | <b>Number of Deficiencies</b> |
|---------------------|-------------------------------|--|--------------------------------------|-----------------------------|-------------------------------|
| 80                  | 60.3                          | 14.9                                   | 64                                   | 4.0                         | -                             |
| 100                 | 49.4                          | 12.8                                   | 61                                   | 2.2                         | 6                             |
| 125                 | 39.6                          | 11.1                                   | 60                                   | 3.0                         | 5                             |
| 160                 | 37.0                          | 9.9                                    | 58                                   | 3.4                         | 3                             |
| 200                 | 30.2                          | 11.2                                   | 58                                   | 5.2                         | 3                             |
| 250                 | 28.0                          | 11.2                                   | 57                                   | 7.4                         | 2                             |
| 315                 | 28.6                          | 9.9                                    | 57                                   | 8.2                         | 2                             |
| 400                 | 28.7                          | 8.4                                    | 56                                   | 7.7                         | 2                             |
| 500                 | 24.3                          | 7.8                                    | 56                                   | 7.1                         | 3                             |
| 630                 | 26.0                          | 7.8                                    | 53                                   | 7.1                         | 1                             |
| 800                 | 26.5                          | 7.8                                    | 48                                   | 6.7                         | 0                             |
| 1000                | 25.1                          | 7.6                                    | 44                                   | 4.7                         | 0                             |
| 1250                | 27.7                          | 7.7                                    | 40                                   | 3.3                         | 0                             |
| 1600                | 26.7                          | 7.8                                    | 35                                   | 4.6                         | 0                             |
| 2000                | 20.6                          | 8.5                                    | 34                                   | 5.9                         | 0                             |
| 2500                | 15.6                          | 9.2                                    | 30                                   | 5.3                         | 0                             |
| 3150                | 11.8                          | 10.0                                   | 24                                   | 4.0                         | 0                             |
| 4000                | 8.6                           | 11.5                                   | 17                                   | 3.1                         | -                             |
| 5000                | 6.5                           | 13.4                                   | 10                                   | 1.6                         | -                             |
| 6300                | 6.1                           | 16.9                                   | 8                                    | 0.5                         | -                             |
| 8000                | 6.1                           | 22.8                                   | 8                                    | 0.4                         | -                             |
| 10000               | 6.1                           | 29.2                                   | 9                                    | 0.4                         | -                             |

**IIC Rating**      **57**      *(Impact Insulation Class)*  
**Deficiencies**    **27**      *(Sum of Deficiencies)*

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

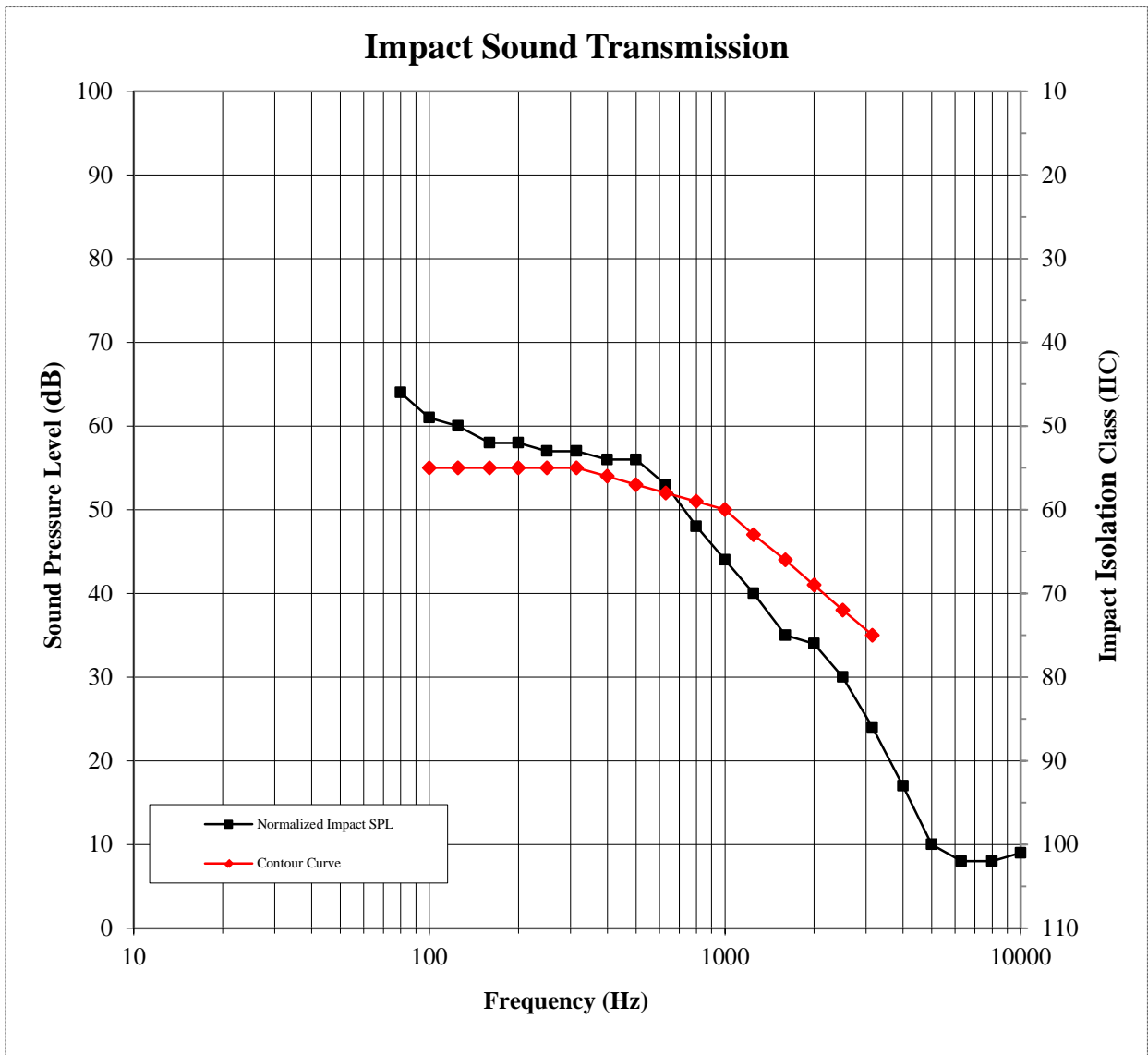


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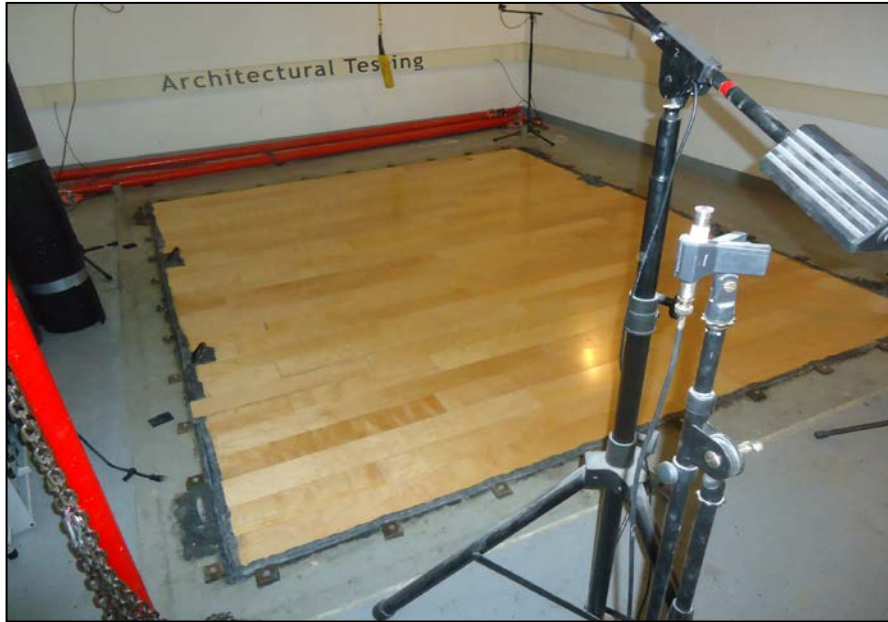


### IMPACT SOUND TRANSMISSION ASTM E 492

|                      |  |
|----------------------|--|
| <b>Test Date</b>     | 11/11/14   |
| <b>Data File No.</b> | E1550.02   |
| <b>Client</b>        | Regupol America  |
| <b>Description</b>   | 11.92 mm Hardwood Flooring, 6 mm Regupol Sonus Rubber Underlayment, 25.4 mm Hacker 3310 Gypsum Concrete Gypsum Concrete, 18.8 mm OSB Sheathing, 88.9 mm Knauf EcoBatt® R13 Fiberglass Insulation, 235 mm 2x10 Dimensional Lumber, 0.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 16.3 mm CertainTeed Type C Gypsum Board |
| <b>Specimen Area</b> | 10.98 m <sup>2</sup>   |
| <b>Technician</b>    | Leeland S. Hoover  |



**Photographs**

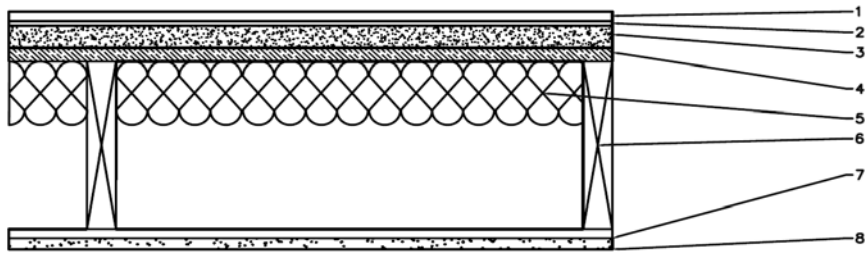


**Source Room View of Test Specimen Installation**



**Receive Room View of Test Specimen Installation**

**Drawing**



- 1-Floor topping
- 2-Underlayment
- 3-Gypsum Concrete
- 4-Subfloor
- 5-Insulation
- 6-Joist
- 7-Ceiling Isolation
- 8-Ceiling