



E8883.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 492 AND ASTM E 2179

Rendered to

REGUPOL AMERICA

Series/Model: Regupol® 6 mm SonusWave™ Impact Sound Underlayment

Specimen Type: Concrete Slab - 152 mm

Overall Size: 3023 mm by 3632 mm

| | |
|-------------|-----------|
| IIC | 54 |
| ΔIIC | 25 |

Test Specimen Identification:

Floor Topping: 12.7 mm Mannington Lexington Hickory Engineered Wood

Floor Underlayment: 6 mm Regupol® SonusWave™ Impact Sound Underlayment

Floor Slab: 152 mm Concrete Slab

Reference should be made to Intertek-ATI Report E8883.01-113-11 for complete test specimen description. This page alone is not a complete report.



Acoustical Performance Test Report

REGUPOL AMERICA
33 Keystone Drive
Lebanon, Pennsylvania 17042

Report E8883.01-113-11
Test Date 06/18/15
Report Date 07/06/15

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct impact sound transmission and delta impact sound transmission tests. The complete test data is included as attachments to this report. The client provided the test specimen. The specimen was constructed on the date of testing.

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

ASTM E 2179-03 (2009), Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete

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 Intertek-ATI located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

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 five sound absorption measurements were conducted at each of five microphone positions.

Test Procedure (Continued)

The delta impact insulation test was conducted in accordance with ASTM E 2179 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 E 492 with only the concrete slab installed.

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

Test Conditions

| Source Room | | Receive Room | |
|---------------------------|--------|---------------------------|--------|
| Average Temperature | 22.1°C | Average Temperature | 22.6°C |
| Average Relative Humidity | 76% | Average Relative Humidity | 70% |

Test Calculations

The IIC (Impact Insulation Class) and ΔIIC (Delta Impact Insulation Class) ratings were calculated in accordance with ASTM E 989 and ASTM E 2179, respectively.

Test Specimen Materials and Installation Details

| Material | Dimensions (mm) | Thickness (mm) | Manufacturer and Series | Quantity | Average Weight |
|--------------------------------------|--|----------------|------------------------------|----------------------|--------------------------|
| Engineered Wood | 914.4 by 127 | 12.7 | Mannington Lexington Hickory | 10.98 m ² | 6.59 kg/m ² |
| | <i>Note: Loose laid.</i> | | | | |
| SonusWave™ Impact Sound Underlayment | 1219.2 by 3023 | 6.0 | Regupol® | 10.98 m ² | 3.05 kg/m ² |
| | <i>Note: Loose laid.</i> | | | | |
| Concrete Slab | 3023 by 3632 | 152.0 | N/A | 10.98 m ² | 366.18 kg/m ² |
| | <i>Note: The concrete slab was installed in a test frame flush to the source room.</i> | | | | |

Comments

The total weight of the floor/ceiling assembly was 4126.6 kg. Intertek-ATI 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.

Intertek-ATI 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 Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

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 is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

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FOR INTERTEK-ATI:

Daniel B. Mohler
Technician II - Acoustical Testing

Bradlay D. Hunt
Project Manager - Acoustical Testing

Attachments (7 Pages): This report is complete only when all attachments are included.

** Stated by Client/Manufacturer*

N/A - Non Applicable

Revision Log

| <u>Revision</u> | <u>Date</u> | <u>Page(s)</u> | <u>Description</u> |
|-----------------|-------------|----------------|-----------------------|
| R0 | 07/06/15 | 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 * |
| Microphone Calibrator | Norsonic | 1251 | Y002919 | 06/14 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | 63748 | 05/15 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | 63744 | 05/15 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | 63745 | 05/15 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | 63746 | 05/15 |
| Receive Room Microphone | PCB Piezotronics | 378B20 | 63747 | 05/15 |
| Receive Room Environmental Indicator | Comet | T7510 | 63810 63811 | 09/14 |
| Source Room Microphone | PCB Piezotronics | 378B20 | 63738 | 04/15 |
| Source Room Microphone | PCB Piezotronics | 378B20 | 63739 | 04/15 |
| Source Room Microphone | PCB Piezotronics | 378B20 | 63740 | 04/15 |
| Source Room Microphone | PCB Piezotronics | 378B20 | 63742 | 04/15 |
| Source Room Microphone | PCB Piezotronics | 378B20 | 63741 | 04/15 |
| Source Room Environmental Indicator | Comet | T7510 | 63812 | 09/14 |
| Tapping Machine | Look Line s.r.l. | EM50 (TM50) | 65351 | 11/14 |

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

Test Chambers

| | |
|------------------------|-----------------------|
| VT Receive Room Volume | 158.86 m ³ |
| VT Source Room Volume | 190 m ³ |



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IMPACT SOUND TRANSMISSION
ASTM E 492

| | |
|----------------------|--|
| Test Date | 06/18/15 |
| Data File No. | E8883.01 |
| Client | Regupol America |
| Description | 12.7 mm Mannington Lexington Hickory Engineered Wood, 6 mm Regupol® SonusWave™ Impact Sound Underlayment, 152 mm Concrete Slab |
| Specimen Area | 10.98 m ² |
| Technician | Daniel B. Mohler |

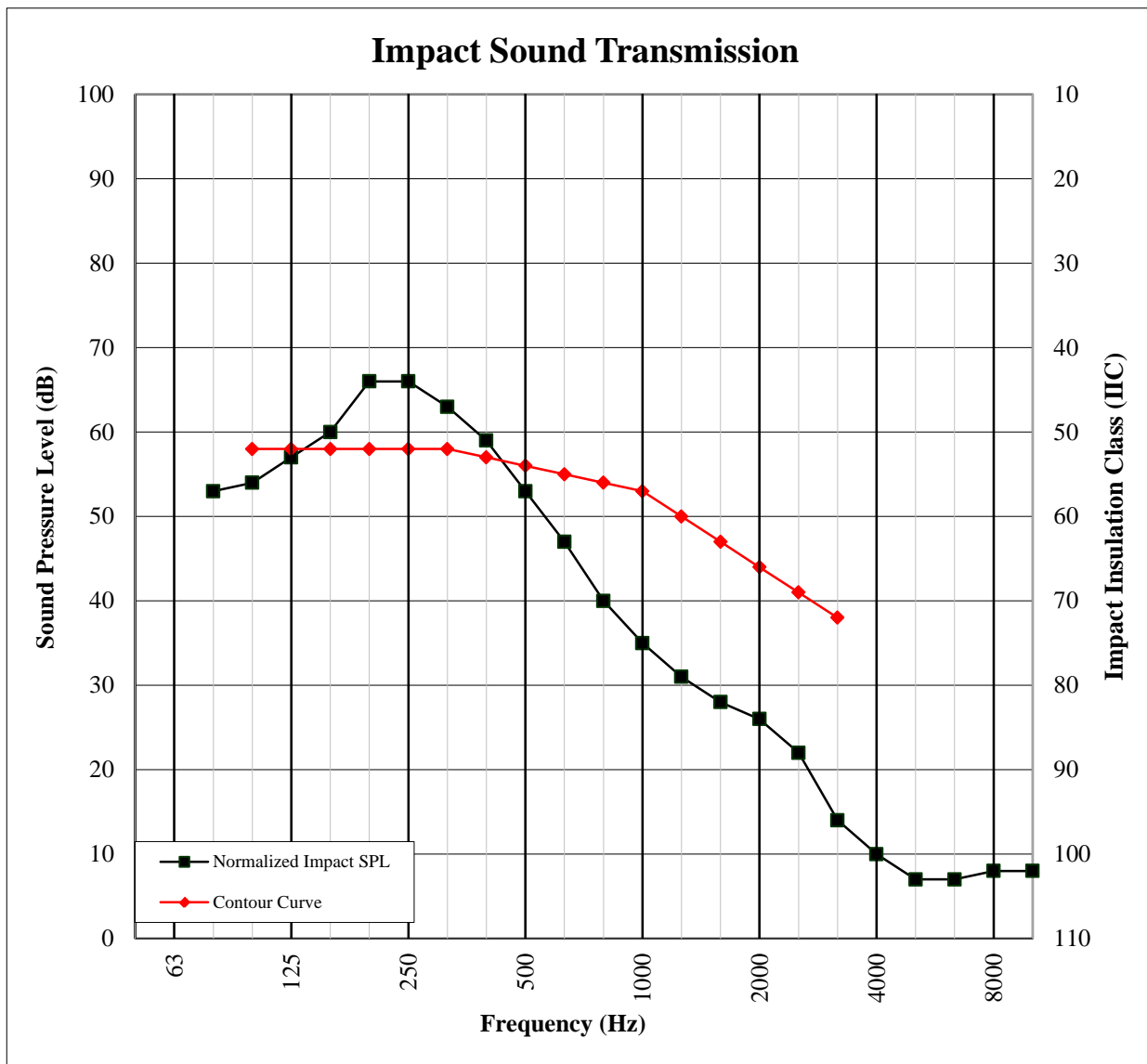
| Freq (Hz) | Background SPL (dB) | Absorption (m ²) | Normalized Impact SPL (dB) | 95% Confidence Limit | Number of Deficiencies |
|---------------------|-------------------------------|--|--------------------------------------|-----------------------------|-------------------------------|
| 80 | 49.4 | 16.9 | 53 | 4.3 | - |
| 100 | 45.0 | 13.0 | 54 | 2.6 | 0 |
| 125 | 41.4 | 9.3 | 57 | 1.9 | 0 |
| 160 | 31.4 | 9.2 | 60 | 0.9 | 2 |
| 200 | 25.3 | 11.3 | 66 | 2.3 | 8 |
| 250 | 26.2 | 10.8 | 66 | 2.1 | 8 |
| 315 | 22.9 | 9.0 | 63 | 1.4 | 5 |
| 400 | 20.8 | 8.1 | 59 | 1.0 | 2 |
| 500 | 22.0 | 7.9 | 53 | 0.9 | 0 |
| 630 | 20.6 | 7.6 | 47 | 0.6 | 0 |
| 800 | 20.5 | 7.8 | 40 | 0.8 | 0 |
| 1000 | 20.7 | 7.5 | 35 | 0.5 | 0 |
| 1250 | 20.6 | 7.6 | 31 | 0.4 | 0 |
| 1600 | 17.3 | 8.0 | 28 | 0.5 | 0 |
| 2000 | 11.8 | 8.6 | 26 | 0.5 | 0 |
| 2500 | 11.1 | 9.2 | 22 | 0.5 | 0 |
| 3150 | 13.1 | 9.8 | 14 | 0.8 | 0 |
| 4000 | 12.8 | 11.1 | 10 | 0.5 | - |
| 5000 | 8.2 | 12.4 | 7 | 0.5 | - |
| 6300 | 6.8 | 15.2 | 7 | 0.5 | - |
| 8000 | 6.5 | 19.5 | 8 | 0.6 | - |
| 10000 | 6.6 | 24.0 | 8 | 0.7 | - |

IIC Rating **54** (*Impact Insulation Class*)
Deficiencies **25** (*Sum of Deficiencies*)

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

IMPACT SOUND TRANSMISSION
ASTM E 492

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|----------------------|--|
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| Technician | Daniel B. Mohler |





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DELTA IMPACT INSULATION
ASTM E 2179

| | |
|----------------------|--|
| Test Date | 06/18/15 |
| Data File No. | E8883.01 |
| Client | Regupol America |
| Description | 12.7 mm Mannington Lexington Hickory Engineered Wood, 6 mm Regupol® SonusWave™ Impact Sound Underlayment, 152 mm Concrete Slab |
| Specimen Area | 10.98 m ² |
| Technician | Daniel B. Mohler |

| Freq (Hz) | Bkgrd SPL (dB) | Absorption (Square Meters) | Normalized Impact SPL BARE (dB) | 95% Conf Limit | Normalized Impact SPL SPEC (dB) | 95% Conf Limit | Resulting Array L _{ref,c} | No. of Deficiencies |
|---------------------|--------------------------|--------------------------------------|--|-----------------------|--|-----------------------|--|----------------------------|
| 100 | 45.0 | 13.0 | 58.0 | 0.7 | 54.5 | 1.1 | 63 | 4 |
| 125 | 41.4 | 9.3 | 60.4 | 1.3 | 57.1 | 2.3 | 64 | 5 |
| 160 | 31.4 | 9.2 | 65.7 | 1.2 | 60.3 | 0.4 | 63 | 4 |
| 200 | 25.3 | 11.3 | 70.9 | 1.2 | 66.4 | 1.5 | 64 | 5 |
| 250 | 26.2 | 10.8 | 70.3 | 1.4 | 65.7 | 0.9 | 64 | 5 |
| 315 | 22.9 | 9.0 | 67.9 | 3.3 | 62.5 | 0.6 | 64 | 5 |
| 400 | 20.8 | 8.1 | 70.7 | 2.2 | 59.0 | 1.3 | 58 | 0 |
| 500 | 22.0 | 7.9 | 70.1 | 1.4 | 52.5 | 0.8 | 53 | 0 |
| 630 | 20.6 | 7.6 | 70.5 | 1.2 | 47.3 | 1.2 | 48 | 0 |
| 800 | 20.5 | 7.8 | 72.8 | 2.3 | 40.3 | 1.0 | 39 | 0 |
| 1000 | 20.7 | 7.5 | 73.4 | 2.3 | 34.9 | 1.0 | 33 | 0 |
| 1250 | 20.6 | 7.6 | 73.1 | 2.6 | 31.0 | 2.2 | 30 | 0 |
| 1600 | 17.3 | 8.0 | 74.1 | 1.1 | 27.9 | 0.5 | 26 | 0 |
| 2000 | 11.8 | 8.6 | 74.5 | 1.1 | 25.7 | 0.5 | 23 | 0 |
| 2500 | 11.1 | 9.2 | 74.6 | 0.9 | 21.6 | 0.9 | 19 | 0 |
| 3150 | 13.1 | 9.8 | 73.8 | 0.7 | 14.3 | 0.8 | 12 | 0 |

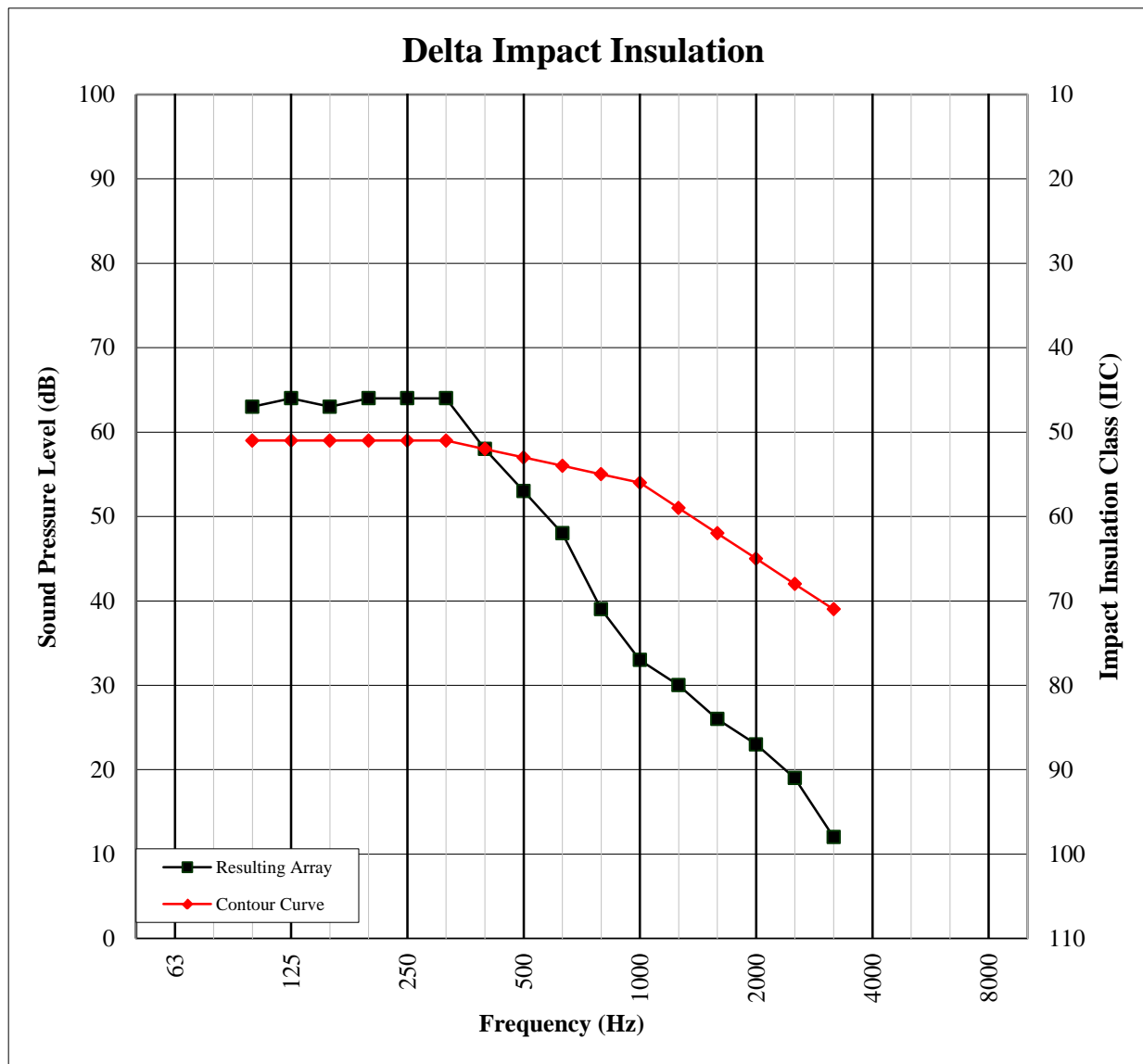
ΔIIC Rating **25** *(Delta Impact Insulation Class)*

Deficiencies **28** *(Sum of Deficiencies)*

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

DELTA IMPACT INSULATION
ASTM E 2179

| | |
|----------------------|--|
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| Specimen Area | 10.98 m ² |
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Photographs

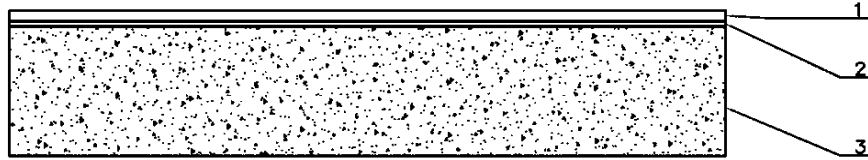


Source Room View of Test Specimen Installation



Receive Room View of Test Specimen Installation

Drawing



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