



E8884.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

REGUPOL AMERICA

Series/Model: Regupol® 8 mm SonusWave™ Impact Sound Underlayment

Specimen Type: Open Web Truss - 406 mm

Overall Size: 3023 mm by 3632 mm

STC 64
IIC 57

Test Specimen Identification:

Floor Topping: 19.2 mm R.L. Colston Solid Oak Hardwood Floor

Raft Layer: 18.8 mm Plywood Sheathing

Floor Underlayment: 8 mm Regupol® SonusWave™ Impact Sound Underlayment

Subfloor Topping: 19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete

Subfloor: 18.8 mm Oriented Strand Board Sheathing

Insulation: 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation

Truss: 406.4 mm York PB Truss L/360 Open Web Truss

Ceiling Isolation: 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel

Ceiling: 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board

Reference should be made to Intertek-ATI Report E8884.01-113-11 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 E8884.01-113-11
Test Date 06/19/15
Report Date 07/06/15

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct airborne sound transmission loss and 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 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 Intertek-ATI 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 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.

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 five 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	
Average Temperature	22.5°C	Average Temperature	21.8°C
Average Relative Humidity	62%	Average Relative Humidity	59%

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 and Installation Details

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Solid Oak Hardwood Floor	Varied by 82.6	19.2	R.L. Colston	10.98 m ²	17.19 kg/m ²
	<i>Note: Installed with 1-1/2 in. 18-Gauge L-Cleat Flooring Nails.</i>				
Plywood Sheathing	1219 by 2438	18.8	N/A	10.98 m ²	4.15 kg/m ²
	<i>Note: Loose laid.</i>				
SonusWave™ Impact Sound Underlayment	1219.2 by 3023	8.0	Regupol®	10.98 m ²	11.55 kg/m ²
	<i>Note: Loose laid.</i>				
Gypsum Concrete	3023 by 3632	19.1	USG LEVELROCK® CSD® Early Exposure™ FR	10.98 m ²	66.35 kg/m ²
	<i>Note: Poured directly on top of the OSB sheathing, cured a minimum of 14 days.</i>				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	10.98 m ²	11.65 kg/m ²
	<i>Note: The OSB was adhered to the trusses with Loctite PL 400 Subfloor adhesive. It was attached with 9D nails on 203.2 mm centers along perimeter and 304.8 mm centers along trusses.</i>				
Fiberglass Insulation	520.7 by 3023	88.9	Johns Manville Unfaced R-13	10.98 m ²	1.32 kg/m ²
	<i>Note: Installed in the cavity between trusses flush with the OSB. Hanger wire was used to keep insulation secure on 304.8mm</i>				
Open Web Truss	88.9 by 2933.7	406.4	York PB Truss L/360	7 ea.	19.05 kg/m ²
	<i>Note: Installed on 609.6 centers using JUS414 hanger brackets.</i>				

Test Specimen Materials and Installation Details (Continued)

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Resilient Channel	68.6 by 2902	12.7	ClarkDietrich RC Deluxe™	23.2 lin m	0.03 kg/m
	<i>Note: Installed on 406.4 centers perpendicular to the trusses. The measured thickness of the metal was 0.7 mm.</i>				
Gypsum Board	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C Core	10.35 m ²	11.9 kg/m ²
	<i>Note: Fastened to resilient channels with 25.4 mm type S screws. Seams finished with joint compound. Perimeter sealed with acoustical caulk.</i>				

Comments

The total weight of the floor/ceiling assembly was 1396 kg. Intertek-ATI will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. The client did not supply drawings of the test specimen.

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 (6 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	156.28 m ³
VT Source Room Volume	190 m ³



E8884.01-113-11-R0



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	06/19/15
Data File No.	E8884.01
Client	Regupol America
Description	19.2 mm R.L. Colston Solid Oak Hardwood Floor, 18.8 mm Plywood Sheathing, 8 mm Regupol® SonusWave™ Impact Sound Underlayment, 19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m ²
Technician	Daniel B. Mohler

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	49.8	17.0	114	71	42	4.20	-
100	41.8	13.2	109	70	40	1.70	-
125	39.5	8.9	109	69	42	1.30	6
160	31.7	8.4	108	64	47	1.20	4
200	27.8	9.9	106	60	48	1.20	6
250	26.7	9.5	106	55	53	1.10	4
315	24.9	9.4	108	55	56	0.60	4
400	23.5	7.9	105	48	60	0.80	3
500	24.2	7.2	104	44	63	0.50	1
630	21.3	7.4	106	43	66	0.50	0
800	20.7	7.1	106	43	67	0.40	0
1000	22.1	7.0	106	41	68	0.40	0
1250	22.9	7.4	106	40	68	0.40	0
1600	18.5	7.6	104	38	69	0.40	0
2000	13.5	8.6	106	39	69	0.30	0
2500	10.6	9.4	104	36	70	0.40	0
3150	9.2	10.1	103	32	72	0.40	0
4000	8.0	11.2	102	28	74	0.50	0
5000	7.5	12.9	102	26	76	0.60	-
6300	6.9	16.5	102	22	79	0.80	-
8000	6.6	21.3	101	18	81	1.00	-
10000	6.5	26.8	101	16	83	0.90	-

STC Rating **64** (*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

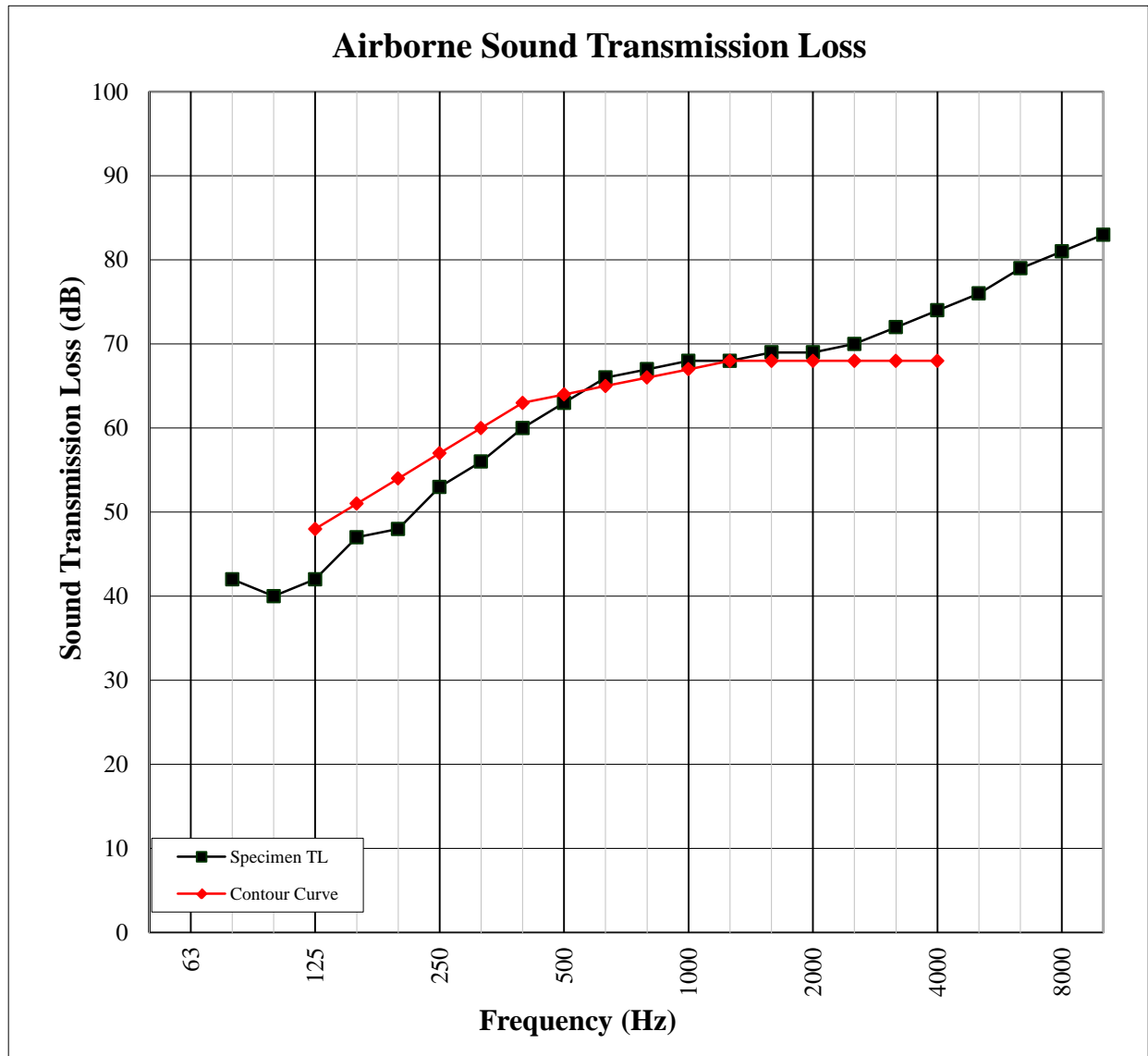


E8884.01-113-11-R0



AIRBORNE SOUND TRANSMISSION LOSS ASTM E 90

Test Date	06/19/15
Data File No.	E8884.01
Client	Regupol America
Description	19.2 mm R.L. Colston Solid Oak Hardwood Floor, 18.8 mm Plywood Sheathing, 8 mm Regupol® SonusWave™ Impact Sound Underlayment, 19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m ²
Technician	Daniel B. Mohler





E8884.01-113-11-R0



IMPACT SOUND TRANSMISSION
ASTM E 492

Test Date	06/19/15
Data File No.	E8884.01
Client	Regupol America
Description	19.2 mm R.L. Colston Solid Oak Hardwood Floor, 18.8 mm Plywood Sheathing, 8 mm Regupol® SonusWave™ Impact Sound Underlayment, 19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m ²
Technician	Daniel B. Mohler

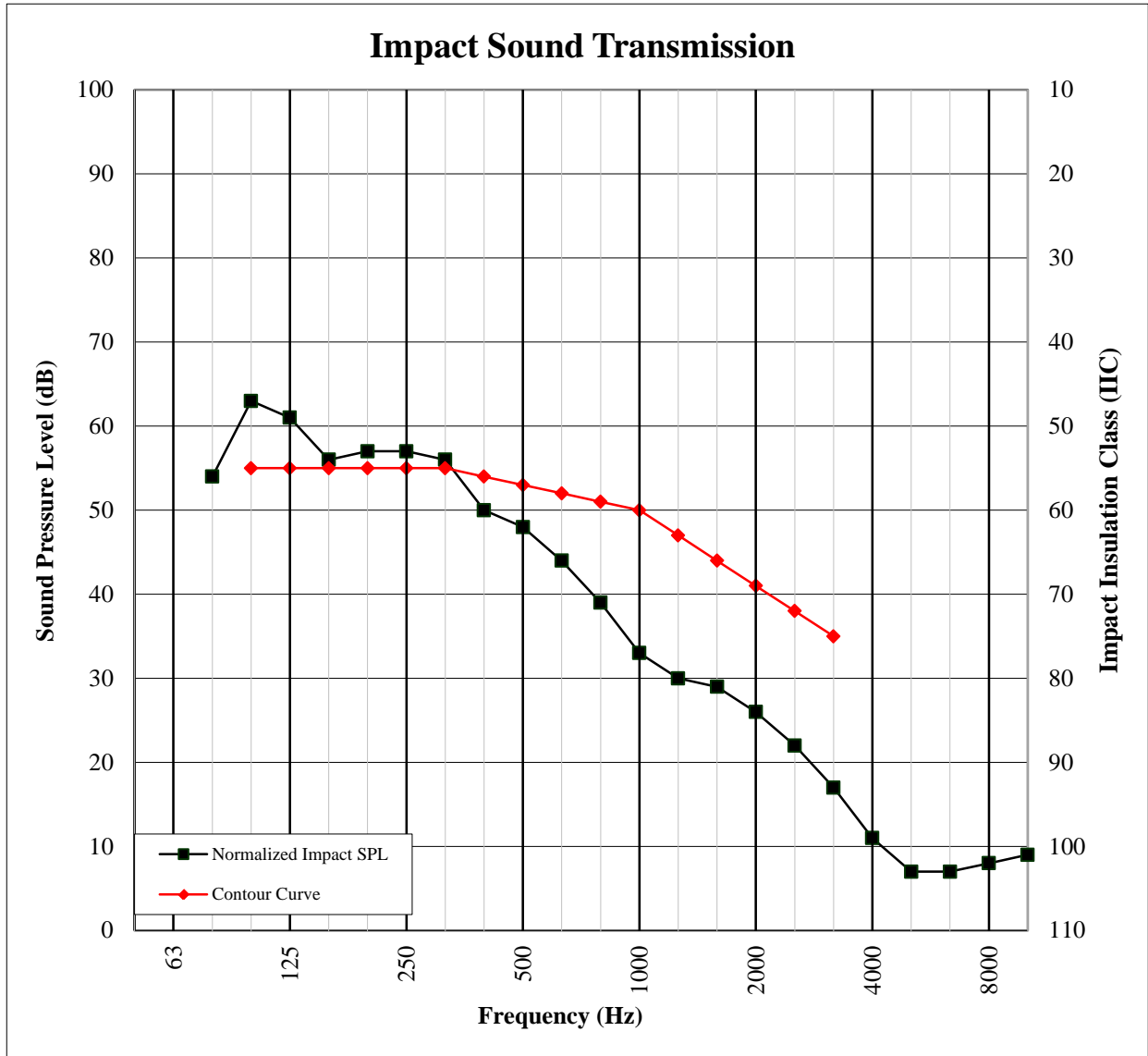
Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Normalized Impact SPL (dB)	95% Confidence Limit	Number of Deficiencies
80	50.0	17.0	54	2.7	-
100	42.1	12.1	63	2.2	8
125	38.3	9.4	61	1.1	6
160	30.5	8.4	56	0.8	1
200	25.4	9.9	57	2.4	2
250	25.8	8.9	57	0.6	2
315	23.0	9.4	56	1.1	1
400	21.7	8.0	50	1.5	0
500	22.0	7.2	48	0.8	0
630	21.5	7.4	44	0.5	0
800	19.9	7.1	39	0.6	0
1000	23.1	7.0	33	0.4	0
1250	23.9	7.3	30	0.2	0
1600	18.8	7.7	29	0.2	0
2000	11.7	8.6	26	0.2	0
2500	8.4	9.3	22	0.3	0
3150	6.7	10.0	17	0.4	0
4000	5.7	11.3	11	0.3	-
5000	6.0	13.1	7	0.5	-
6300	6.1	16.4	7	0.7	-
8000	6.4	21.5	8	0.5	-
10000	6.4	26.3	9	0.6	-

IIC Rating **57** *(Impact Insulation Class)*
Deficiencies **20** *(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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Specimen Area	10.98 m ²
Technician	Daniel B. Mohler



Photographs



Source Room View of Test Specimen Installation



Receive Room View of Test Specimen Installation