E1550.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

REGUPOL AMERICA

Series/Model: 3 mm Regupol Sonus Rubber Underlayment

Specimen Type: Floor/Ceiling Assembly

Overall Size: 3023 mm by 3632 mm

STC	**59**
IIC	**56**

Test Specimen Identification:
Floor Topping: 11.92 mm Hardwood Flooring
Floor Underlayment: 3 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 E1550.01-113-11 for complete test specimen description.

Acoustical Performance Test Report

REGUPOL AMERICA
33 Keystone Drive
Lebanon, Pennsylvania 17042

Report	E1550.01-113-11
Test Date	11/11/14
Report Date	01/16/15
Record Retention End Date	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	18.1 °C	Maximum Temperature	18.3 °C
Minimum Temperature	17.4 °C	Minimum Temperature	18.3 °C
Average Temperature	18.0 °C	Average Temperature	18.3 °C
Maximum Relative Humidity	70%	Maximum Relative Humidity	65%
Minimum Relative Humidity	70%	Minimum Relative Humidity	65%
Average Relative Humidity	70%	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 m²	7.62 kg/m²
	Note: Loose laid.				
Rubber Underlayment	3048 by 1219.2	3.0	Regupol Sonus	10.98 m²	2.49 kg/m²
	Note: Loose laid.				
Gypsum Concrete	3023 by 3632	25.4	Hacker 3310 Gypsum Concrete	10.98 m²	4.61 kg/m²
	Note: Poured directly on top of the OSB sheathing, cured a minimum of 14 days.				
OSB Sheathing	1219 by 2438	18.8	N/A	10.98 m²	10.25 kg/m²
	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.				
R13 Fiberglass Insulation	2940 by 406	88.9	Knauf EcoBatt®	10.98 m²	1.03 kg/m²
	Note: Laid directly over resilient channels.				

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
	Note: Fastened to perimeter frame on 406 mm centers using 18 gauge joist hangers and 9 gauge 31.75 mm nails.				
Resilient Channel	68.6 by 2902	0.7	ClarkDietrich RC Deluxe™	23.2 lin m	0.72 kg
	Note: Fastened perpendicular to joists on 406 mm centers with 25.4 mm type S screws.				
Type C Gypsum Board	1219 by 29.3	16.3	CertainTeed	10.35 m²	11.65 kg/m²

Comments

The total weight of the floor/ceiling assembly was 536.8 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:

Digitally Signed by: Leeland Hoover

Leeland S. Hoover
Technician II - Acoustical Testing

Digitally Signed by: Bradlay Hunt

Bradlay D. Hunt
Project Manager - Acoustical Testing

Attachments (7)

** Stated by Client/Manufacturer*
N/A - Non Applicable

Revision Log

Revision	Date	Page(s)	Description
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^3
VT Source Room Volume	190 m^3

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	11/11/14
Data File No.	E1550.01
Client	Regupol America
Description	11.92 mm Hardwood Flooring, 3 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
Specimen Area	10.98 m²
Technician	Leeland S. Hoover

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Source SPL** (dB)	**Receive SPL** (dB)	**Specimen TL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	48.9	16.6	108	67	40	5.40	-
100	40.5	9.6	106	66	42	3.80	-
125	35.7	9.9	105	65	42	2.10	1
160	28.7	8.9	107	66	43	1.50	3
200	25.9	9.8	105	59	48	1.20	1
250	24.9	10.1	105	54	52	1.40	0
315	23.0	9.4	104	53	53	1.00	2
400	23.3	7.8	104	53	53	1.00	5
500	25.1	7.4	103	52	54	0.70	5
630	20.0	7.1	105	51	56	0.80	4
800	20.9	7.3	104	50	57	0.70	4
1000	22.9	7.0	104	48	59	0.70	3
1250	21.4	7.1	105	46	62	1.60	1
1600	19.3	7.2	105	42	65	1.10	0
2000	12.5	7.8	105	40	67	0.40	0
2500	8.8	8.7	104	39	67	0.40	0
3150	6.8	9.2	104	35	70	0.50	0
4000	6.5	10.5	104	31	73	0.60	0
5000	6.3	12.3	104	28	76	0.70	-
6300	6.0	15.8	98	17	80	0.80	-
8000	6.2	20.9	97	13	83	0.90	-
10000	6.1	27.0	92	6	82	0.70	-

STC Rating **59** *(Sound Transmission Class)*

Deficiencies 29 *(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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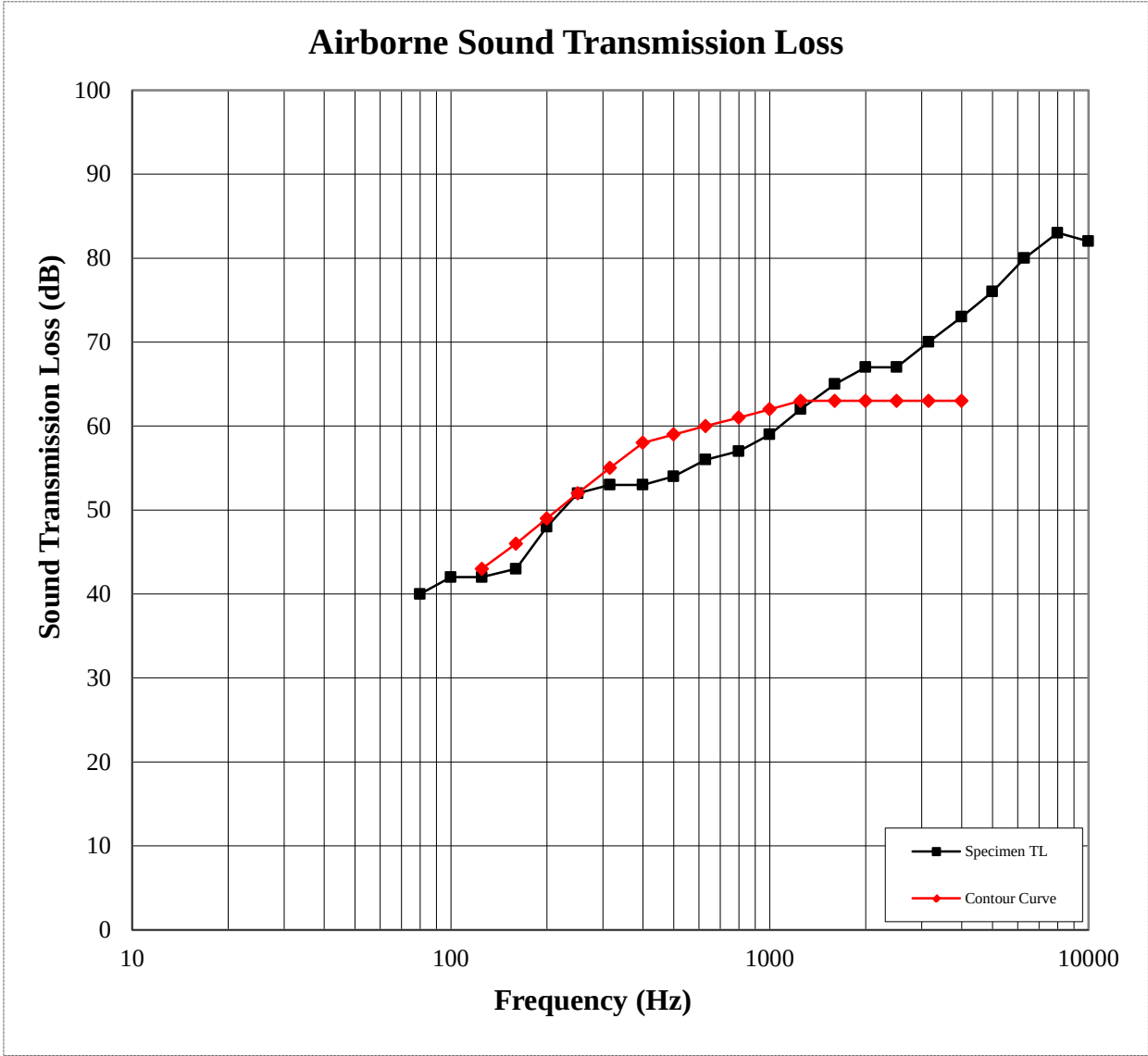
AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	11/11/14
Data File No.	E1550.01
Client	Regupol America
Description	11.92 mm Hardwood Flooring, 3 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
Specimen Area	10.98 m²
Technician	Leeland S. Hoover



Architectural Testing

ACCREDITED TL-144

IMPACT SOUND TRANSMISSION

ASTM E 492

Test Date	11/11/14
Data File No.	E1550.01
Client	Regupol America
Description	11.92 mm Hardwood Flooring, 3 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
Specimen Area	10.98 m²
Technician	Leeland S. Hoover

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Normalized Impact SPL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	45.4	16.3	62	4.3	-
100	40.3	11.6	62	2.4	6
125	33.9	10.4	60	3.4	4
160	26.9	9.8	59	2.8	3
200	24.3	10.8	59	2.2	3
250	23.9	10.6	58	3.6	2
315	22.6	10.1	59	4.6	3
400	22.8	8.2	58	3.5	3
500	23.9	7.8	58	3.5	4
630	20.4	7.6	55	3.7	2
800	20.6	7.8	51	4.4	0
1000	22.7	7.6	46	3.7	0
1250	21.8	7.7	43	3.6	0
1600	19.7	7.8	39	4.8	0
2000	12.6	8.5	39	4.8	0
2500	10.0	9.3	36	4.7	0
3150	7.8	10.0	30	5.9	0
4000	7.1	11.4	24	6.2	-
5000	6.1	13.3	18	6.0	-
6300	6.0	17.0	12	5.0	-
8000	6.1	22.3	9	1.4	-
10000	6.1	29.1	9	0.3	-

IIC Rating **56** *(Impact Insulation Class)*

Deficiencies 30 *(Sum of Deficiencies)*

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

Architectural Testing

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IMPACT SOUND TRANSMISSION

ASTM E 492

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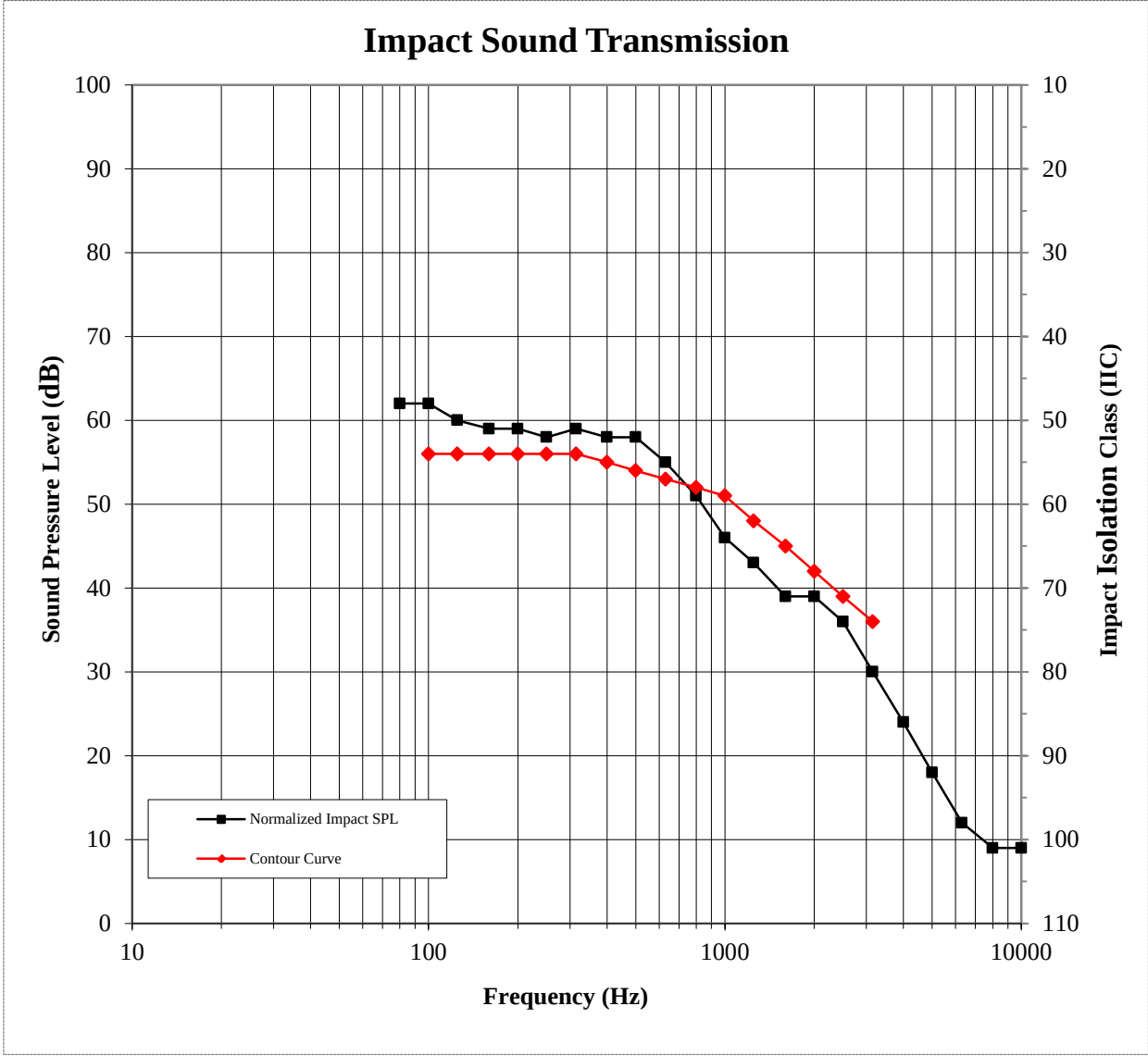
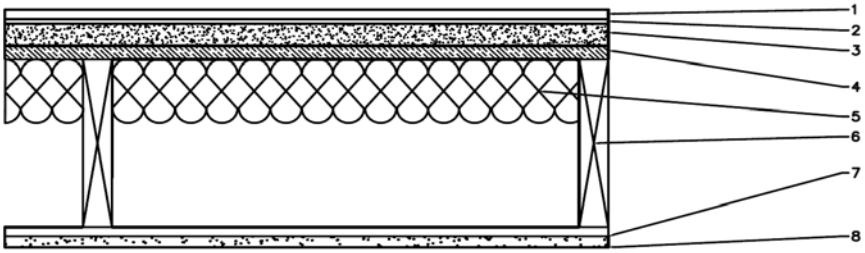


Photographs

Source Room View of Test Specimen Installation

Receive Room View of Test Specimen Installation

Drawing



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