



**E1550.03-113-11-R0**  
**ACOUSTICAL PERFORMANCE TEST REPORT**  
**ASTM E 90 AND ASTM E 492**

**Rendered to**

**REGUPOL AMERICA**

**Series/Model: 12 mm Regupol Sonus Rubber Underlayment**

**Specimen Type: Floor/Ceiling Assembly**

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

**STC     60**  
**IIC     58**

**Test Specimen Identification:**

Floor Topping: 11.92 mm Hardwood Flooring

Floor Underlayment: 12 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 E1550.03-113-11 for complete test specimen description.



## Acoustical Performance Test Report

REGUPOL AMERICA  
33 Keystone Drive  
Lebanon, Pennsylvania 17042

<b>Report</b>	E1550.03-113-11
<b>Test Date</b>	11/12/14
<b>Report Date</b>	01/16/15
<b>Record Retention End Date</b>	11/12/18

### 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	17.7 °C
Minimum Temperature	17.5 °C	Minimum Temperature	17.7 °C
Average Temperature	17.6 °C	Average Temperature	17.7 °C
Maximum Relative Humidity	69%	Maximum Relative Humidity	66%
Minimum Relative Humidity	68%	Minimum Relative Humidity	65%
Average Relative Humidity	68%	Average Relative Humidity	66%

**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	12.0	Regupol Sonus	10.98 m <sup>2</sup>	8.79 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 606 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>	11/12/14
<b>Data File No.</b>	E1550.03
<b>Client</b>	Regupol America
<b>Description</b>	11.92 mm Hardwood Flooring, 12 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 (Hz)	Background SPL (dB)	Absorption (m <sup>2</sup> )	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	59.7	15.5	106	66	40	#VALUE!	-
100	44.2	10.6	105	66	40	3.90	-
125	38.9	10.3	104	65	41	1.90	3
160	35.8	9.1	106	66	42	1.60	5
200	30.4	10.5	104	59	46	1.80	4
250	29.8	10.2	103	55	50	1.50	3
315	29.1	9.1	103	53	52	1.40	4
400	27.1	7.7	103	52	54	0.80	5
500	27.1	7.2	103	50	56	0.90	4
630	27.0	7.0	105	49	59	0.80	2
800	26.3	7.2	105	47	61	0.50	1
1000	26.2	7.1	104	45	62	0.70	1
1250	27.1	7.1	105	43	65	0.90	0
1600	25.7	7.3	104	42	66	0.50	0
2000	21.7	7.9	104	40	67	0.70	0
2500	19.2	8.9	104	39	67	0.70	0
3150	18.8	9.4	103	35	69	0.70	0
4000	15.8	10.6	103	31	72	0.60	0
5000	14.4	12.4	103	28	75	0.80	-
6300	11.5	16.1	97	15	82	0.90	-
8000	10.1	21.4	96	11	83	0.90	-
10000	8.4	27.2	92	6	83	0.70	-

**STC Rating**      **60**      (*Sound Transmission Class*)  
**Deficiencies**    **32**      (*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



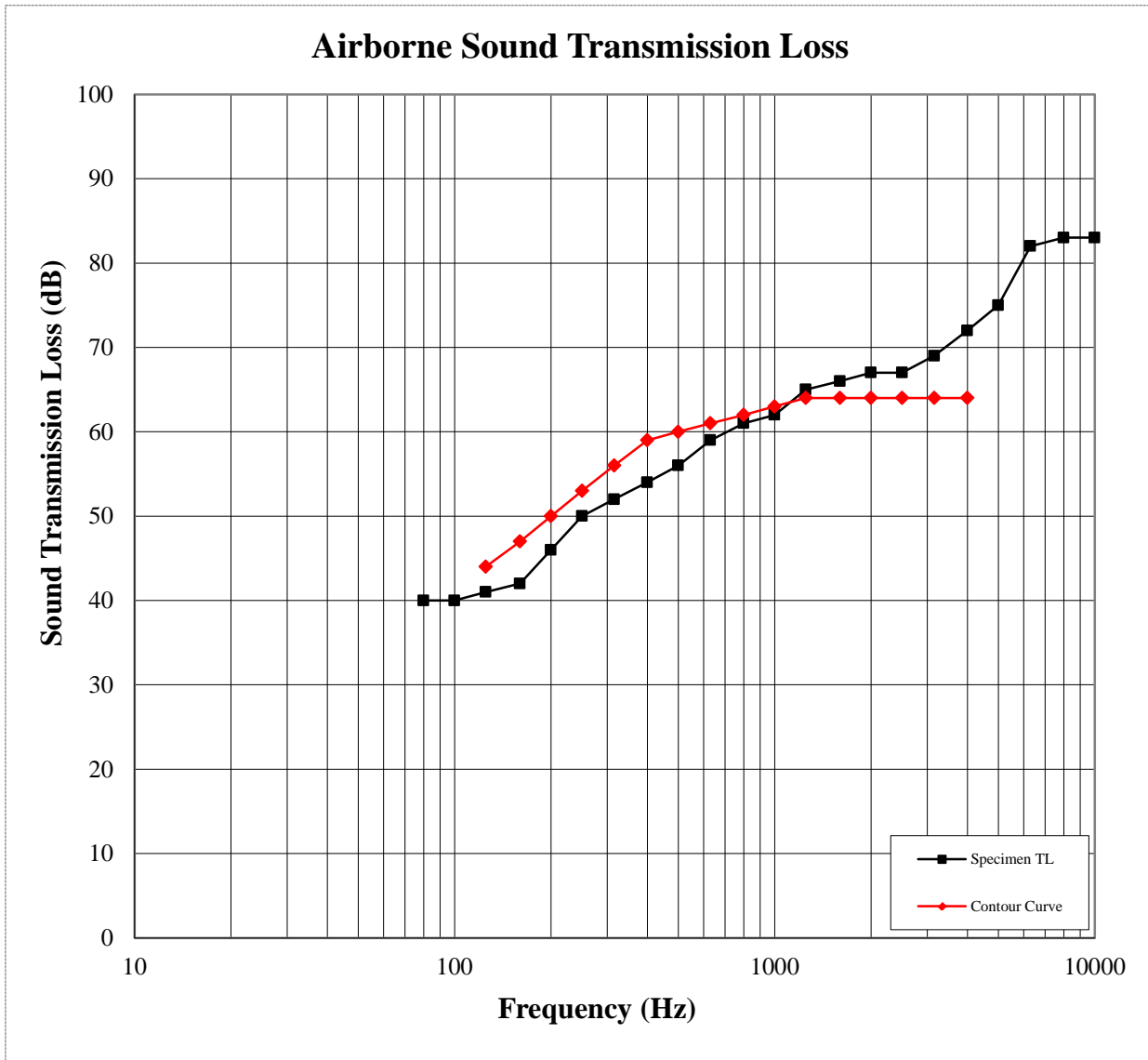
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# AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

<b>Test Date</b>	11/12/14
<b>Data File No.</b>	E1550.03
<b>Client</b>	Regupol America
<b>Description</b>	11.92 mm Hardwood Flooring, 12 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







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**IMPACT SOUND TRANSMISSION**  
ASTM E 492

<b>Test Date</b>	11/12/14
<b>Data File No.</b>	E1550.03
<b>Client</b>	Regupol America
<b>Description</b>	11.92 mm Hardwood Flooring, 12 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> (Hz)	<b>Background SPL</b> (dB)	<b>Absorption</b> (m <sup>2</sup> )	<b>Normalized Impact SPL</b> (dB)	<b>95% Confidence Limit</b>	<b>Number of Deficiencies</b>
80	59.7	14.8	62	4.5	-
100	47.3	9.8	60	2.3	6
125	42.6	10.1	59	1.1	5
160	41.0	10.1	58	1.8	4
200	35.3	10.9	58	2.6	4
250	30.9	10.8	57	5.7	3
315	30.4	10.2	57	7.4	3
400	28.9	8.1	55	7.1	2
500	27.4	7.8	53	5.3	1
630	27.9	7.4	50	5.2	0
800	26.5	7.8	46	4.8	0
1000	26.8	7.6	41	3.5	0
1250	28.7	7.7	39	3.2	0
1600	26.3	7.6	36	1.9	0
2000	20.8	8.4	34	4.1	0
2500	16.9	9.6	30	4.6	0
3150	17.2	10.0	23	3.4	0
4000	12.6	11.4	16	2.4	-
5000	10.4	13.3	11	2.2	-
6300	7.6	17.3	9	1.3	-
8000	6.8	22.7	8	0.6	-
10000	6.3	29.3	9	0.5	-

**IIC Rating**      **58**      *(Impact Insulation Class)*  
**Deficiencies**    **28**      *(Sum of Deficiencies)*

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

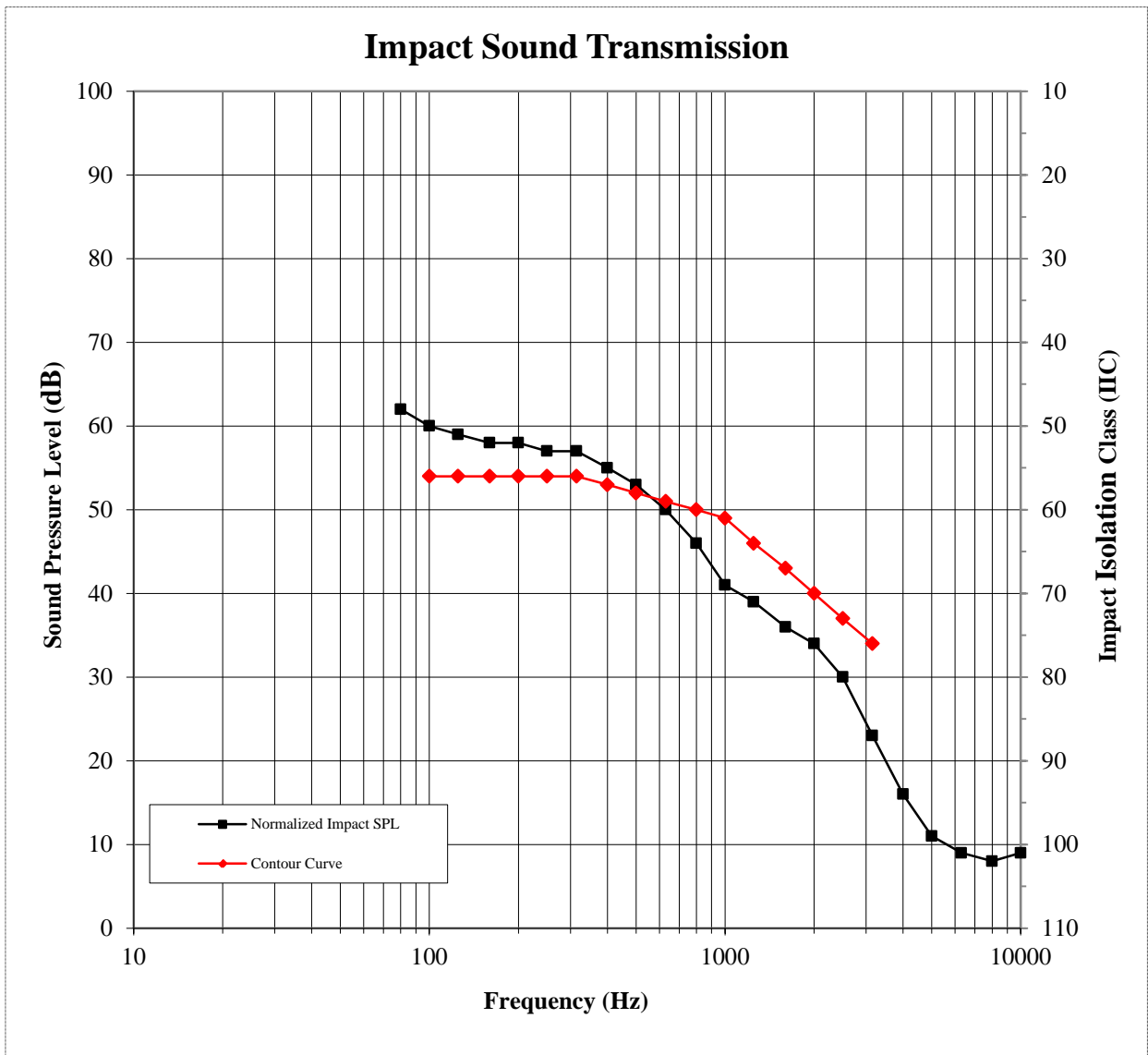


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### IMPACT SOUND TRANSMISSION ASTM E 492

<b>Test Date</b>	11/12/14
<b>Data File No.</b>	E1550.03
<b>Client</b>	Regupol America
<b>Description</b>	11.92 mm Hardwood Flooring, 12 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**

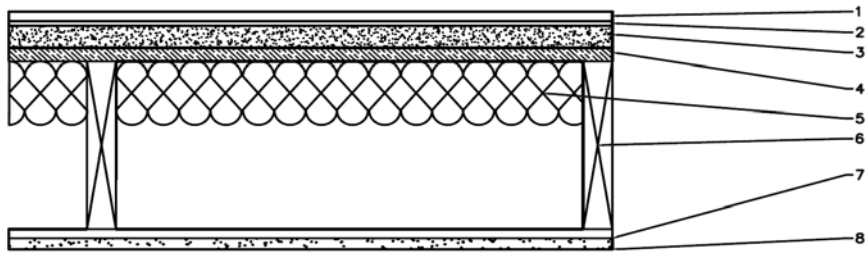


**Source Room View of Test Specimen Installation**



**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