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REGUPOL AMERICA
ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 AND ASTM E492 TESTING ON
ENGINEERED HARDWOOD OVER REGUPOL® SONUS™

SPECIMEN TYPE
Concrete Slab - 203 mm

REPORT NUMBER
I3264.02-113-11-R0

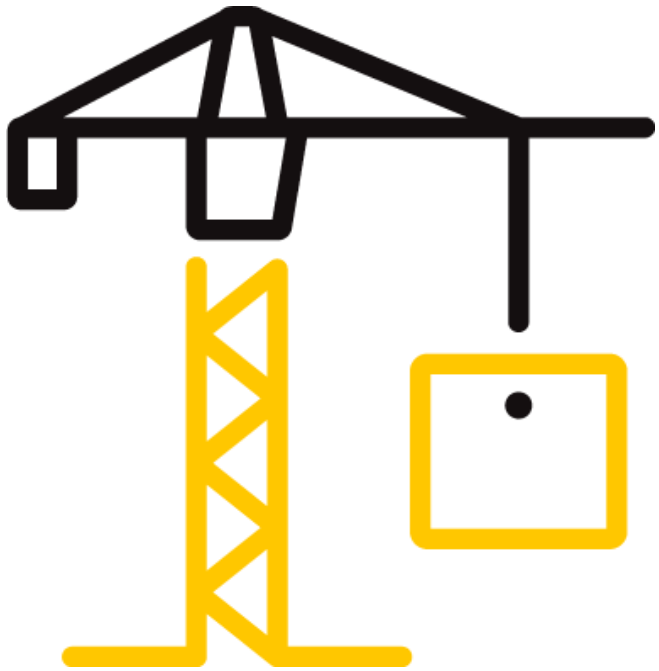
TEST DATE
05/10/18

ISSUE DATE
05/11/18

RECORD RETENTION END
05/10/22

PAGES
13

DOCUMENT CONTROL
ATI 00629 (09/19/17)
RTTDS-R-AMER-Test-2844



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TEST REPORT FOR REGUPOL AMERICA

Report No.: I3264.02-113-11-R0
Date: 05/11/18

REPORT ISSUED TO

REGUPOL AMERICA
11 Ritter Way
Lebanon, Pennsylvania 17042

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by to perform testing in accordance with ASTM E90 AND ASTM E492 on Engineered Hardwood over Regupol® Sonus™. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted in the VT test chambers at Intertek B&C located in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

DATA FILE NO.	I3264.02
SERIES/MODEL:	Engineered Hardwood over Regupol® Sonus™
STC	56
IIC	56

COMPLETED BY:	Cody R. Snyder	**COMPLETED BY:**	Jordan Strybos
TITLE:	Technician I - Acoustical Testing	**TITLE:**	Project Manager - Acoustical Testing
SIGNATURE:	Digitally Signed by: Cody Snyder	**SIGNATURE:**	Digitally Signed by: Jordan Strybos
DATE:	05/11/18	**DATE:**	05/11/18

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SECTION 3
TEST METHODS

The specimen was evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E492-09(2016)e1, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM E989-06 (2012), *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4
MATERIAL SOURCE/INSTALLATION

The full test specimen was assembled on the day of testing by B&C. All materials provided by the client were installed on an existing B&C assembly (Concrete Slab - 203 mm) utilizing B&C-supplied materials. The assembly was installed in a steel test frame which was installed into the opening between the source and receive rooms in the test chamber. The test frame was isolated from the structure with dense neoprene gasket.

The total weight of the floor/ceiling assembly was 5949.5 kg. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. A drawing of the test specimen is included in the report.

B&C 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 B&C for the entire test record retention period.

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SECTION 5
EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition Card	63763-1	06/16	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-4	07/16	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-5	06/16	*
Microphone Calibrator	Norsonic	1251	Pistonphone calibrator	65105	06/17	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65617	05/17	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	05/17	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	05/17	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/17	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	05/17	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/17	
				63811	10/17	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01009	02/18	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63739	04/18	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63740	04/18	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	03/18	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	63741	04/18	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	INT00603	03/18	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	12/17	

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

VT RECEIVE ROOM VOLUME	158.34 m^3
VT SOURCE ROOM VOLUME	190 m^3

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Cody R. Snyder	Intertek B&C
Jordan Strybos	Intertek B&C

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SECTION 7
TEST PROCEDURE

The microphones were calibrated before conducting the tests. The air temperature and relative humidity conditions were monitored and recorded during all measurements. The average temperature and humidity of both the source and received rooms are listed in Sections 10 and 11. The maximum and minimum temperatures and humidities of the receive room from the duration of the test are listed in Sections 12 and 13.

The airborne transmission loss test was conducted in accordance with the ASTM E90 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. Two sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

The impact sound transmission test was conducted in accordance with the ASTM E492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E492, and five sound absorption measurements were conducted at each of five microphone positions.

Detailed test procedures, data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

SECTION 8
TEST CALCULATIONS

The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E413 and ASTM E989, respectively.

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TEST REPORT FOR REGUPOL AMERICA

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SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	Dimensions (mm)	Thickness (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Engineered Hardwood	Varied by 111.1	20.0	Preverco	10.98 m²	9.62 kg/m²
	Note: Adhered to the underlayment with DriTac 7300 adhesive using a (TR-4) 6.35 mm by 6.35 mm by 6.35 mm square-notch trowel. Adhesive was allowed to cure per manufacturer's specifications.				
Rubber Underlayment	1232 by 685.8	10.0	Regupol® Sonus™	10.98 m²	7.52 kg/m²
	Note: A sheet of 2 mil polyethylene plastic was adhered to the concrete slab with 3M Super 77 spray adhesive. The underlayment was adhered to the sheeting with DriTac Moisture Block 4-in-1 adhesive, which was spread using a (TR-10) 6.35 mm by 4.76 mm V-notch trowel and rolled with a 100 pound flooring roller. Adhesive was allowed to cure per manufacturer's specifications.				
Concrete Slab	3023 by 3632	203.2	5000 PSI	10.98 m²	524.71 kg/m²
	Note: Installed in a test frame flush to the source room. Mats of #5 reinforcing bars were placed 25.4 mm from both the top and bottom of the slab, with bars spaced on 305 mm centers in both directions. No noticeable shrinkage or cracking was visible on the specimen.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS

ACCREDITED Testing Laboratory

TEST DATE	5/10/2018				
DATA FILE NO.	I3264.02				
CLIENT	Regupol America				
DESCRIPTION	20 mm Preverco Engineered Hardwood, 10 mm Regupol® Sonus™ Rubber Underlayment, 203.2 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	20.8°C	**Source Temp.**	21.4°C
TECHNICIAN	CRS	**Receive Humidity**	55%	**Source Humidity**	55%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	43.0	16.1	109	67	40	4.5	-
100	33.3	13.0	106	69	37	1.8	-
125	32.1	9.6	105	67	39	1.8	1
160	29.1	8.9	108	71	37	1.0	6
200	23.8	10.3	105	63	43	0.8	3
250	26.2	10.0	104	59	46	0.9	3
315	23.5	9.9	107	62	46	0.7	6
400	19.7	8.3	104	56	49	0.9	6
500	23.5	7.6	105	54	53	0.5	3
630	22.6	7.3	105	50	57	0.6	0
800	20.8	7.2	105	47	59	0.6	0
1000	20.7	7.1	105	44	63	0.4	0
1250	17.5	7.3	105	41	66	0.3	0
1600	16.4	7.2	105	39	67	0.4	0
2000	14.2	8.1	104	39	67	0.4	0
2500	9.7	8.9	103	37	67	0.3	0
3150	7.4	9.5	104	33	71	0.4	0
4000	6.2	10.8	104	31	73	0.6	0
5000	5.5	12.2	104	28	75	0.7	-
6300	5.7	15.5	97	18	78	0.6	-
8000	6.0	19.9	97	14	81	0.8	-
10000	6.2	24.5	92	7	81	0.6	-
STC Rating	**56**	*(Sound Transmission Class)*			**Sum of Deficiencies**		**28**

Notes:

1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
2) Specimen TL levels listed in red are potentially limited by the laboratory flanking limit.
3) Specimen TL levels listed in blue indicate the lower limit of the transmission loss.
4) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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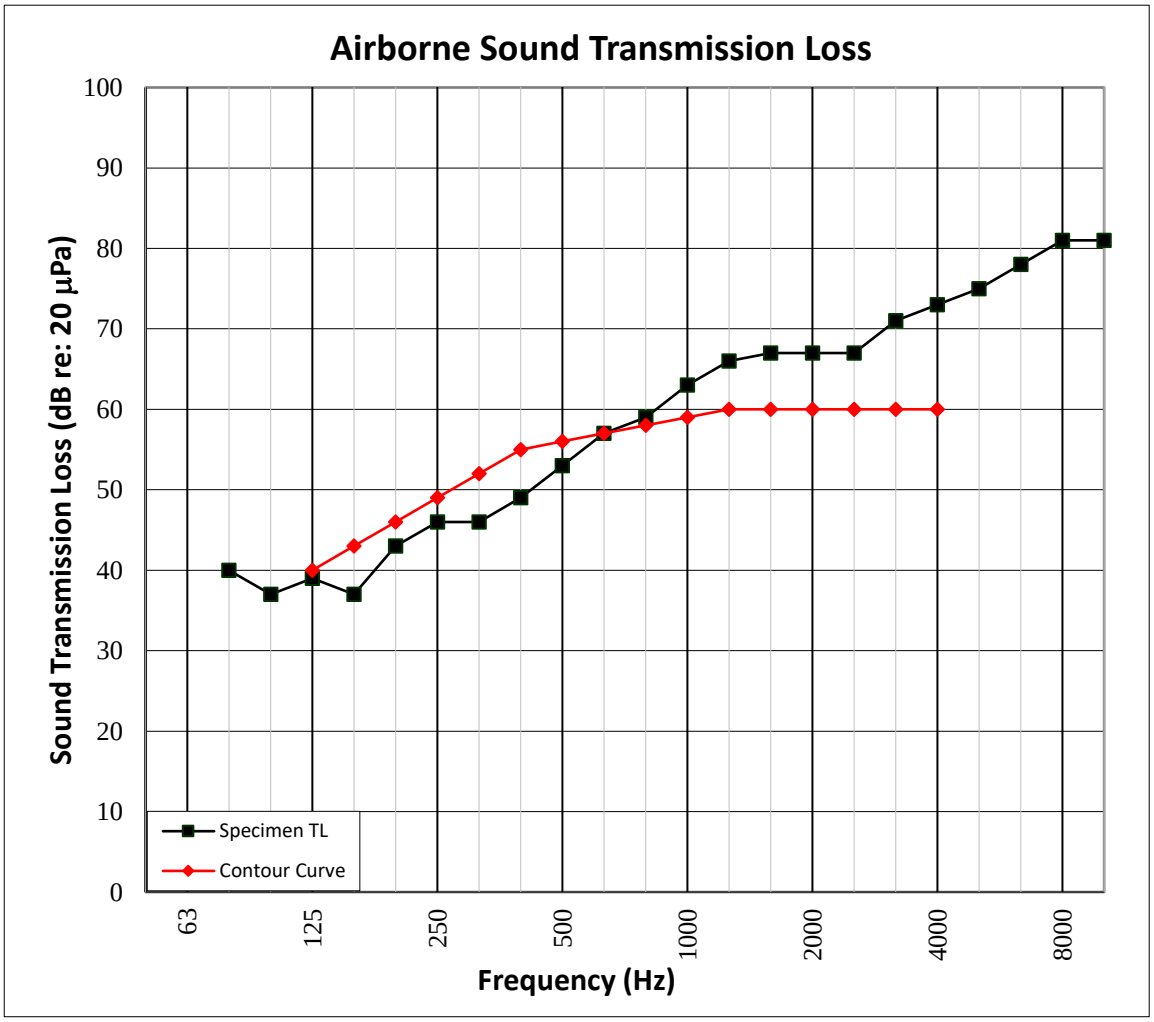
SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH

ACCREDITED Testing Laboratory

TEST DATE	5/10/2018				
DATA FILE NO.	I3264.02				
CLIENT	Regupol America				
DESCRIPTION	20 mm Preverco Engineered Hardwood, 10 mm Regupol® Sonus™ Rubber Underlayment, 203.2 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	20.8°C	**Source Temp.**	21.4°C
TECHNICIAN	CRS	**Receive Humidity**	55%	**Source Humidity**	55%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION

ACCREDITED Testing Laboratory

TEST DATE	5/10/2018				
DATA FILE NO.	I3264.02				
CLIENT	Regupol America				
DESCRIPTION	20 mm Preverco Engineered Hardwood, 10 mm Regupol® Sonus™ Rubber Underlayment, 203.2 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	20.8°C	**Minimum Temp.**	20.8°C
TECHNICIAN	CRS	**Max. Humidity**	55%	**Min. Humidity**	55%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** m²	**NORMALIZED IMPACT SPL** (dB)	**95% CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
80	44.0	15.5	53	2.2	-
100	32.7	12.6	53	1.3	0
125	31.9	9.8	56	1.6	0
160	28.4	8.5	62	1.3	6
200	23.9	9.9	64	1.0	8
250	26.2	10.0	63	1.1	7
315	23.5	9.8	63	0.4	7
400	19.2	8.2	57	0.7	2
500	23.1	7.7	55	0.6	1
630	20.5	7.3	48	0.6	0
800	19.4	7.1	48	0.5	0
1000	16.2	7.0	45	0.6	0
1250	12.4	7.2	40	0.4	0
1600	9.6	7.3	36	0.5	0
2000	5.9	8.0	31	0.6	0
2500	4.8	9.0	26	0.6	0
3150	4.6	9.6	19	0.6	0
4000	4.8	10.8	11	0.6	-
5000	5.1	12.2	7	0.4	-
6300	5.6	15.5	6	0.3	-
8000	6.0	19.7	7	0.4	-
10000	6.2	25.0	8	0.4	-
IIC Rating	**56**	*(Impact Insulation Class)*		**Sum of Deficiencies**	**31**

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

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TEST REPORT FOR REGUPOL AMERICA

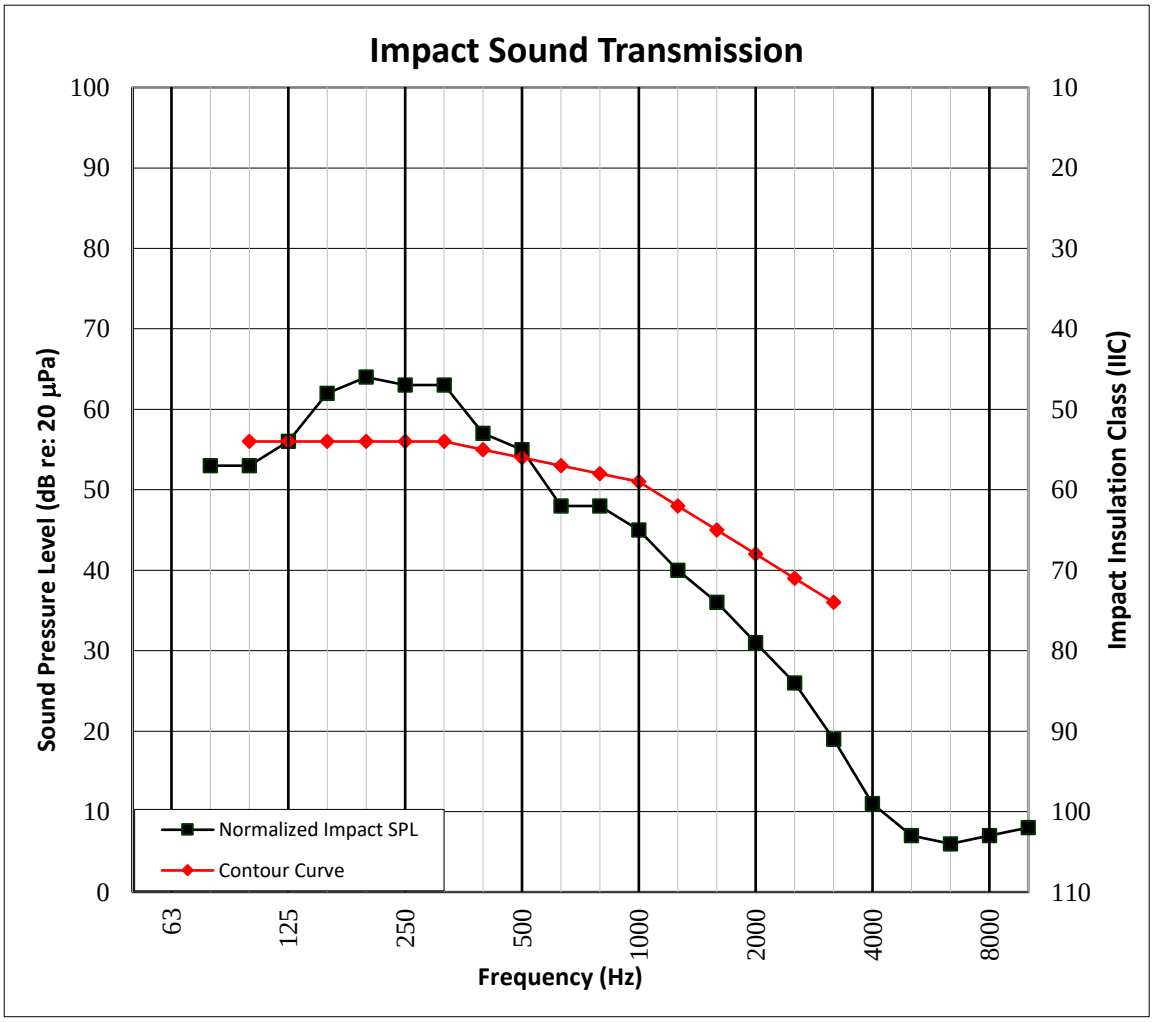
Report No.: I3264.02-113-11-R0
Date: 05/11/18

SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH

ACCREDITED Testing Laboratory

TEST DATE	5/10/2018				
DATA FILE NO.	I3264.02				
CLIENT	Regupol America				
DESCRIPTION	20 mm Preverco Engineered Hardwood, 10 mm Regupol® Sonus™ Rubber Underlayment, 203.2 mm 5000 PSI Concrete Slab				
SPECIMEN AREA	10.98 m²	**Maximum Temp.**	20.8°C	**Minimum Temp.**	20.8°C
TECHNICIAN	CRS	**Max. Humidity**	55%	**Min. Humidity**	55%



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SECTION 14
PHOTOGRAPHS

Photo No. 1
Source Room View of Test Specimen Installation

Photo No. 2
Receive Room View of Test Specimen Installation

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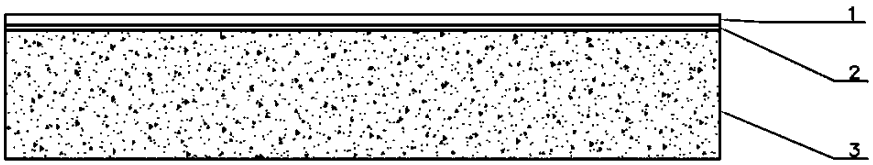
SECTION 15
DRAWING



1-Floor Topping
2-Underlayment
3-Concrete Slab

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SECTION 16

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	05/11/18	N/A	Original Report Issue