SHAW INDUSTRIES INC.
ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ISO 10140-2, ISO 10140-3, AND ISO 3741 TESTING ON SHAW ECOLOGIX® CARPET TILE

SPECIMEN TYPE
Concrete Slab - 152 mm (6")

REPORT NUMBER
G5871.34-113-11-R0

TEST DATE
01/24/17

ISSUE DATE
08/08/19

RECORD RETENTION END
01/24/21

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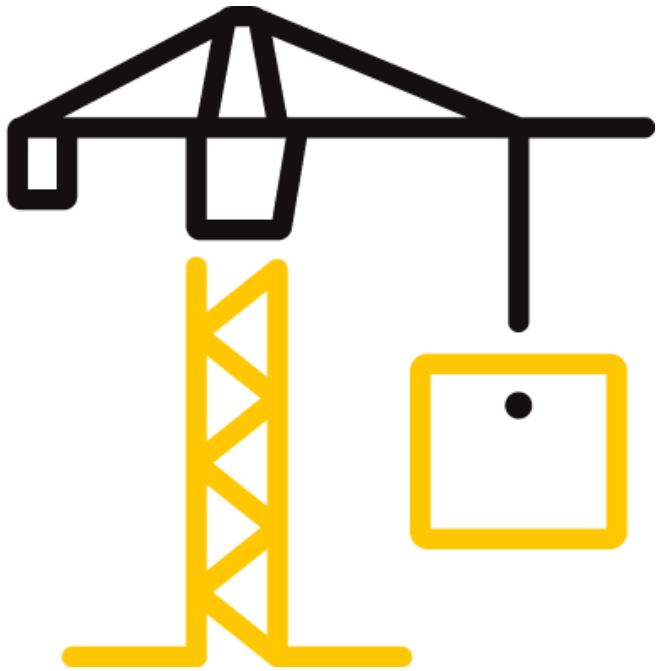

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TEST REPORT FOR SHAW INDUSTRIES INC.
Report No.: G5871.34-113-11-R0
Date: 08/08/19

REPORT ISSUED TO
SHAW INDUSTRIES INC.
616 East Walnut Avenue
Dalton, Georgia 30721

SECTION 1
SCOPE

Intertek Building & Construction (B&C) was contracted by Shaw Industries Inc. to perform testing in accordance with ISO 10140-2, ISO 10140-3, and ISO 3741 on Shaw EcoLogix® Carpet Tile. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted in the VT test chambers at Intertek B&C located in York, Pennsylvania. These test chambers satisfy the lab requirements specified in ISO 10140-5.

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.	G5871.34			
SERIES/MODEL:	Shaw EcoLogix® Carpet Tile			
Rw	**51** dB	$C_{50\text{-}3,150}$ = -2 dB	$C_{50\text{-}5,000}$ = -1 dB	$C_{100\text{-}5,000}$ = 0 dB
		$C_{tr,50\text{-}3,150}$ = -6 dB	$C_{tr,50\text{-}5,000}$ = -6 dB	$C_{tr,100\text{-}5,000}$ = -5 dB
$L_{n,w}$	**45** dB	$C_{I,50\text{-}2,500}$ = 0 dB	$C_{I,50\text{-}2,500}$ = 3 dB	
ΔL_w	**33** dB			
L_{wA}	**73** dBA			

COMPLETED BY:	Daniel B. Mohler	**COMPLETED BY:**	Jordan Strybos
TITLE:	Project Lead - Acoustical Testing	**TITLE:**	Engineer, Team Lead - Acoustical Testing
SIGNATURE:	Digitally Signed by: Daniel Mohler	**SIGNATURE:**	Digitally Signed by: Jordan Strybos
DATE:	08/08/19	**DATE:**	08/08/19

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SECTION 3
TEST METHODS

The specimen was evaluated in accordance with the following:

ISO 10140-2:2010(E), *Laboratory measurement of sound insulation of building elements - Measurement of airborne Sound insulation*

ISO 717-1:1996(E), *Rating of sound insulation in buildings and of building elements - Airborne sound insulation*

ISO 10140-3:2010(E), *Laboratory measurement of sound insulation of building elements - Measurement of impact sound insulation*

ISO 717-2:2013(E), *Rating of sound insulation in buildings and of building elements - Impact sound insulation*

ISO 3741:1999(E), *Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms*

ISO 10140-5:2010, *Laboratory measurement of sound insulation of building elements - Requirements for test facilities and equipment*

SECTION 4
MATERIAL SOURCE/INSTALLATION

The full test specimen was assembled into the testing frame on the day of testing by B&C. All materials provided by the client were installed on an existing B&C assembly (Concrete Slab - 152 mm (6")) 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 4054.7 kg / 8938.6 lbs. 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. The test record retention period ends four years after the test date.

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SECTION 5
EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	INT00977	06/16	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	65124	06/16	*
Data Acquisition Unit	National Instruments	PXI-4462	Data Acquisition Card	63763-1	06/16	*
Microphone Calibrator	Norsonic	Nor1251	Acoustical Calibrator	INT00127	01/16	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63748	06/16	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	06/16	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	06/16	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65617	06/16	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	06/16	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/16	
				63811	10/16	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63738	05/16	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63739	05/16	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63740	05/16	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	05/16	
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	63741	05/16	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	11/16	
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	Tapping Machine	65351	02/16	

* The calibration frequency for this equipment is every two years per the manufacturer's recommendation.
Calibration frequency for all other equipment is once a year per the manufacturers' recommendations.

VT RECEIVE ROOM VOLUME	158.86 m^3 (5610.1 ft^3)
VT SOURCE ROOM VOLUME	190 m^3 (6709.79 ft^3)

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Daniel B. Mohler	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 airborne sound insulation test was conducted in accordance with the ISO 10140-2 test 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 insulation test was conducted in accordance with the ISO 10140-3 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ISO 10140-3, and five sound absorption measurements were conducted at each of five microphone positions. The tapping machine positions were random in accordance with the requirements of ISO 10140-3.

The source room sound power level data was collected per ISO 3741 during the tapping machine measurements for the impact sound insulation test. All data was analyzed per ISO 3741.

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

SECTION 8
TEST CALCULATIONS

The Rw (Sound Reduction Index), Ln,w (Impact Sound Insulation), and ΔLw (Improvement of Impact Sound Insulation) ratings were calculated in accordance with ISO 717-1 and ISO 717-2, respectively. The LwA (source room sound power level) was calculated in accordance with ISO 3741.

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SECTION 9
TEST SPECIMEN DESCRIPTION

MATERIAL	Dimensions (mm/inch)	Thickness (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Carpet Tile	609.6 by 609.6 24 by 24	8 / 0.31	Shaw EcoLogix®	10.98 m² 118.19 ft²	3.1 kg/m² 0.63 lb/ft²
	Note: A sheet of 2 mil polyethylene plastic was adhered to the floor slab with 3M Super 77 spray adhesive. The floor topping was adhered to the sheeting with Shaw 5000 adhesive, which was spread using a 9.53 mm (3/8") medium nap roller. Adhesive was allowed to cure per manufacturer's specifications.				
Concrete Slab	3023 by 3632 119 by 143	152.4 / 6	N/A	10.98 m² 118.19 ft²	366.18 kg/m² 75 lb/ft²
	Note: The concrete slab was installed in a test frame flush to the source room.				

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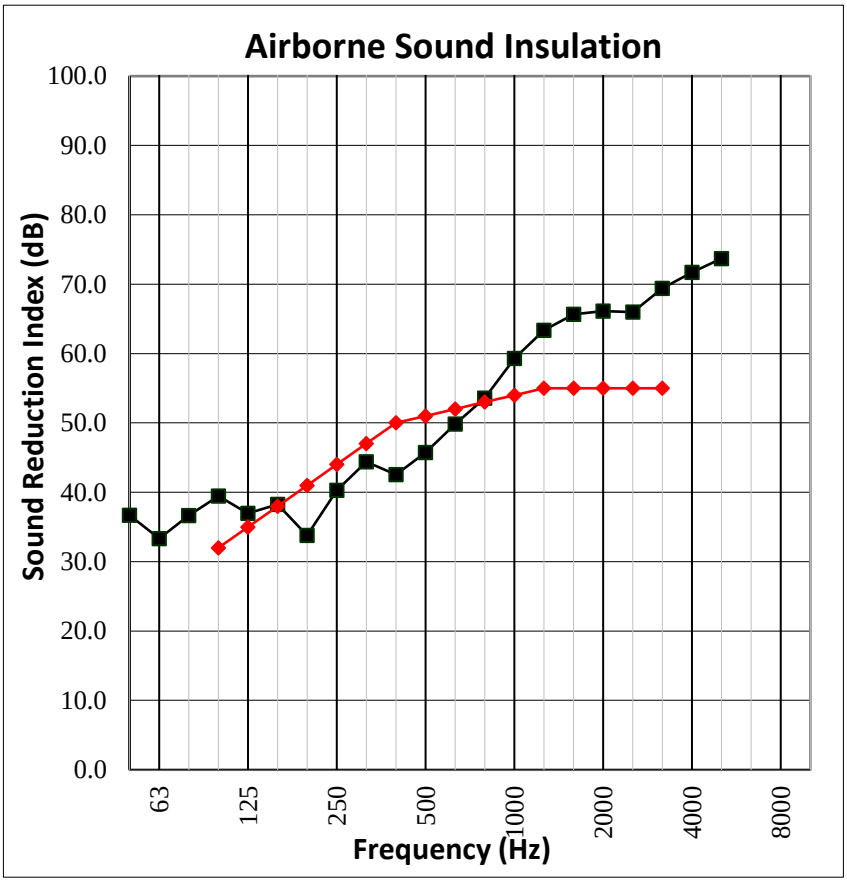
SECTION 10
TEST RESULTS - SOUND REDUCTION INDEX (IN ACCORDANCE WITH ISO 10140-2)

TEST DATE	01/24/17				
DATA FILE NO.	G5871.34				
CLIENT	Shaw Industries Inc.				
DESCRIPTION	8 mm (0.31") Shaw EcoLogix® Carpet Tile, 152.4 mm (6") Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	20.1°C (68.2°F)	**Source Temp.**	19.4°C (67°F)
TECHNICIAN	DBM	**Receive Humidity**	59%	**Source Humidity**	59%

FREQUENCY *f* Hz	***R*** one-third octave dB
50	36.7
63	33.3
80	36.6
100	39.5
125	37.0
160	38.3
200	33.8
250	40.3
315	44.4
400	42.5
500	45.7
630	49.8
800	53.6
1000	59.3
1250	63.4
1600	65.7
2000	66.1
2500	66.0
3150	69.4
4000	71.7
5000	73.7



Rating in accordance with ISO 717-1:

$R_w(C;C_{tr})$ = **51** dB $C_{50\text{-}3,150}$ = -2 dB $C_{50\text{-}5,000}$ = -1 dB $C_{100\text{-}5,000}$ = 0 dB

Evaluation based on laboratory measurement results obtained by an engineering method:

$C_{tr,50\text{-}3,150}$ = -6 dB $C_{tr,50\text{-}5,000}$ = -6 dB $C_{tr,100\text{-}5,000}$ = -5 dB

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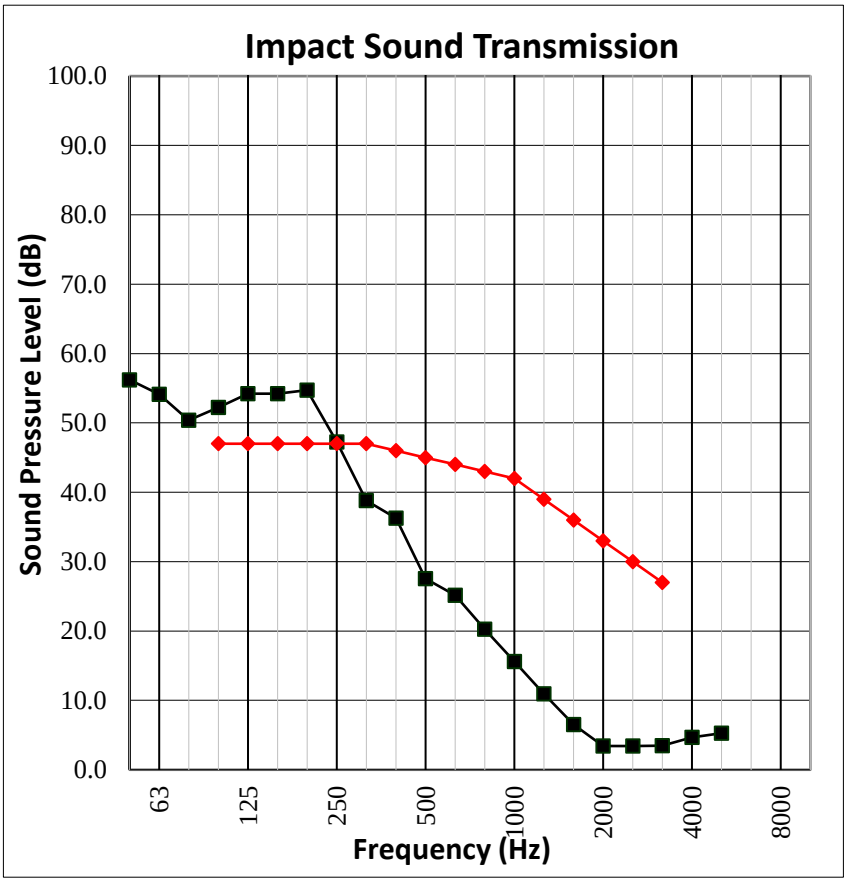
SECTION 11
TEST RESULTS - NORMALIZED IMPACT SPL (IN ACCORDANCE WITH ISO 10140-3)

TEST DATE	01/24/17				
DATA FILE NO.	G5871.34				
CLIENT	Shaw Industries Inc.				
DESCRIPTION	8 mm (0.31") Shaw EcoLogix® Carpet Tile, 152.4 mm (6") Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	20.1°C (68.2°F)	**Source Temp.**	19.4°C (67°F)
TECHNICIAN	DBM	**Receive Humidity**	59%	**Source Humidity**	59%

FREQUENCY *f* Hz	L_n one-third octave dB
50	56.2
63	54.1
80	50.4
100	52.3
125	54.2
160	54.2
200	54.7
250	47.3
315	38.8
400	36.3
500	27.6
630	25.1
800	20.3
1000	15.6
1250	11.0
1600	6.5
2000	3.4
2500	3.4
3150	3.5
4000	4.6
5000	5.3



Rating in accordance with ISO 717-2:

$L_{n,w}(C_I)$ = **45** (0) dB $C_{I,50\text{-}2,500}$ = 3 dB

ΔL_w = **33** dB

Evaluation based on laboratory measurement results obtained by an engineering method.

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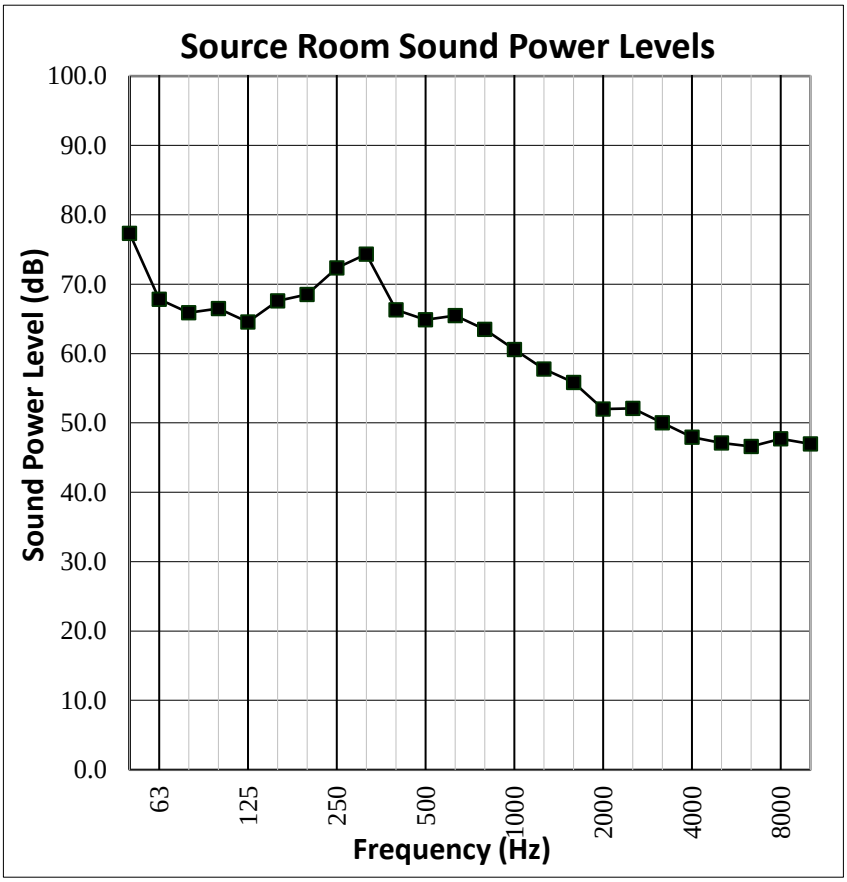
SECTION 12

TEST RESULTS - SOURCE ROOM SOUND POWER LEVEL (IN ACCORDANCE WITH ISO 3741)

TEST DATE	01/24/17				
DATA FILE NO.	G5871.34				
CLIENT	Shaw Industries Inc.				
DESCRIPTION	8 mm (0.31") Shaw EcoLogix® Carpet Tile, 152.4 mm (6") Concrete Slab				
SPECIMEN AREA	10.98 m²	**Receive Temp.**	20.1°C (68.2°F)	**Source Temp.**	19.4°C (67°F)
TECHNICIAN	DBM	**Receive Humidity**	59%	**Source Humidity**	59%

FREQUENCY *f* Hz	L_w one-third octave dB
50	77.3
63	67.8
80	65.9
100	66.5
125	64.6
160	67.6
200	68.5
250	72.4
315	74.3
400	66.3
500	64.9
630	65.5
800	63.5
1000	60.6
1250	57.8
1600	55.8
2000	52.0
2500	52.1
3150	50.0
4000	47.9
5000	47.1



A-weighted sound power level in accordance with ISO 3741 (Annex F):
L_{wA} = **73** dB(A)
Evaluation based on the precision method for reverberation rooms.

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SECTION 13
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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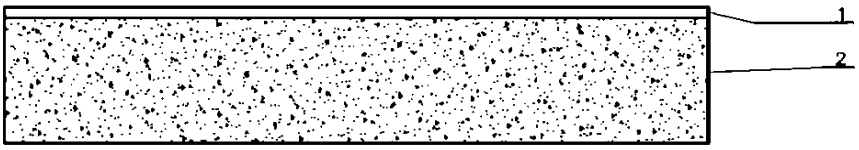
SECTION 14
DRAWING



1-Floor Topping
2-Concrete Slab

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SECTION 15

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	08/08/19	N/A	Original Report Issue