

# KARNDEAN DESIGNFLOORING ACOUSTICAL PERFORMANCE TEST REPORT

**SCOPE OF WORK**

ISO 10140-2, ISO 10140-3 TESTING ON  
4.5 MM LOOSELAY LLP109

**SPECIMEN TYPE**

Concrete Slab - 152 mm (6")

**REPORT NUMBER**

P1663.03-113-11-R0

**TEST DATE**

09/21/22

**ISSUE DATE**

10/05/22

**RECORD RETENTION END**

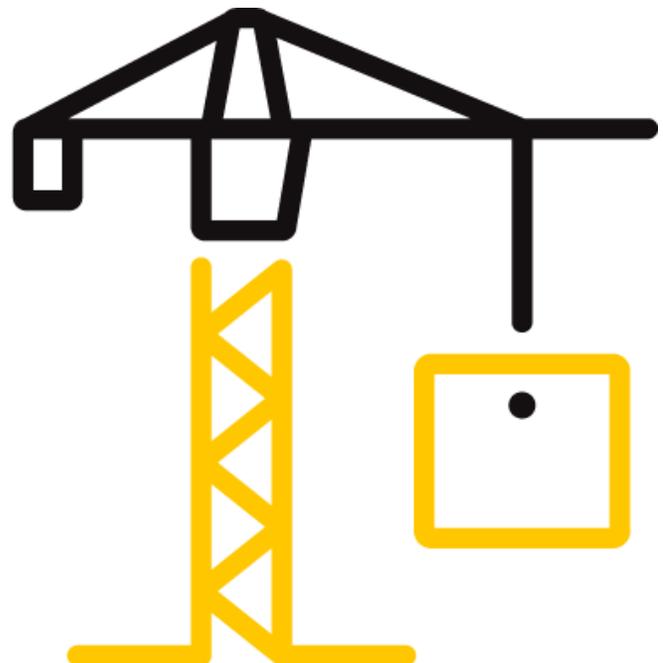
09/21/26

**PAGES**

11

**DOCUMENT CONTROL**

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## TEST REPORT FOR KARNDEAN DESIGNFLOORING

Report No.: P1663.03-113-11-R0

Date: 10/05/22

### REPORT ISSUED TO

#### KARNDEAN DESIGNFLOORING

1100 Pontiac Court, Bushy Run Corporate Park  
Export, Pennsylvania 15632

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Karndean Designflooring to perform testing in accordance with ISO 10140-2, ISO 10140-3 on 4.5 mm LooseLay LLP109. 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

<b>DATA FILE NO.</b>	P1663.03		
<b>SERIES/MODEL:</b>	4.5 mm LooseLay LLP109		
<b>R<sub>w</sub></b>	52 dB	$C_{50-3,150} = -1$ dB	$C_{50-5,000} = 0$ dB
		$C_{tr,50-3,150} = -6$ dB	$C_{tr,50-5,000} = -6$ dB
		$C_{100-5,000} = 0$ dB	$C_{tr,100-5,000} = -5$ dB
<b>L<sub>n,w</sub></b>	64 dB	$C_{1,100-2,500} = -6$ dB	$C_{1,50-2,500} = -5$ dB
<b>ΔL<sub>n,w</sub></b>	14 dB		

**COMPLETED BY:** Michael A. Unnone  
Technician - Acoustical  
**TITLE:** Testing

**SIGNATURE:**  
**DATE:** 10/05/22

**REVIEWED BY:** Daniel B. Mohler  
Project Lead - Acoustical  
**TITLE:** Testing

**SIGNATURE:**  
**DATE:** 10/05/22

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**TEST REPORT FOR KARNDEAN DESIGNFLOORING**

Report No.: P1663.03-113-11-R0

Date: 10/05/22

**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 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 4105.8 kg / 9052 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.

## TEST REPORT FOR KARNDKAN DESIGNFLOORING

Report No.: P1663.03-113-11-R0

Date: 10/05/22

### SECTION 5 EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02586	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02587	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02608	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02609	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02610	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02612	04/22	*
2-Channel Analog Output	National Instruments	NI 9260	2-Channel Analog Input	INT02573	04/22	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	10/21	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63741	06/22	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63740	04/22	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	10/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	09/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65968	01/22	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/21	
				63811	10/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65103	02/22	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64902	12/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63739	07/22	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	04/22	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	64906	04/22	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	10/21	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	02/22	

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

<b>VT RECEIVE ROOM VOLUME</b>	158.86 m <sup>3</sup> (5610.1 ft <sup>3</sup> )
<b>VT SOURCE ROOM VOLUME</b>	190 m <sup>3</sup> (6709.79 ft <sup>3</sup> )

### SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Michael A. Unnone	Intertek B&C
Daniel B. Mohler	Intertek B&C

**TEST REPORT FOR KARNDUAN DESIGNFLOORING**

Report No.: P1663.03-113-11-R0

Date: 10/05/22

**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 through 15.

The airborne sound insulation test was conducted in accordance with the ISO 10140-2 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 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 delta impact insulation test was conducted in accordance with ISO 10140-3 test method. In addition to the impact sound transmission test, two sound pressure level measurements with the tapping machine operating at each position specified by ISO 10140-3 with only the concrete slab installed 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  $R_w$  (Sound Reduction Index), IIC (Impact Sound Insulation), and  $\Delta L_w$  (Improvement of Impact Sound Insulation) ratings were calculated in accordance with ISO 717-1, ISO 717-2, respectively.

**TEST REPORT FOR KARNDUAN DESIGNFLOORING**

Report No.: P1663.03-113-11-R0

Date: 10/05/22

**SECTION 9**

**TEST SPECIMEN DESCRIPTION**

MATERIAL	Dimensions (mm/inch)	Thickness (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Flooring	1050 by 250 41.3 by 9.8	4.5 / 0.18	LooseLay LLP109	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	7.75 kg/m <sup>2</sup> 1.59 lb/ft <sup>2</sup>
	Note: Loose laid				
Concrete Slab	3023 by 3632 119 by 143	152.4 / 6	5000 PSI	10.98 m <sup>2</sup> 118.19 ft <sup>2</sup>	366.18 kg/m <sup>2</sup> 75 lb/ft <sup>2</sup>
	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.				

## TEST REPORT FOR KARNDEAN DESIGNFLOORING

Report No.: P1663.03-113-11-R0

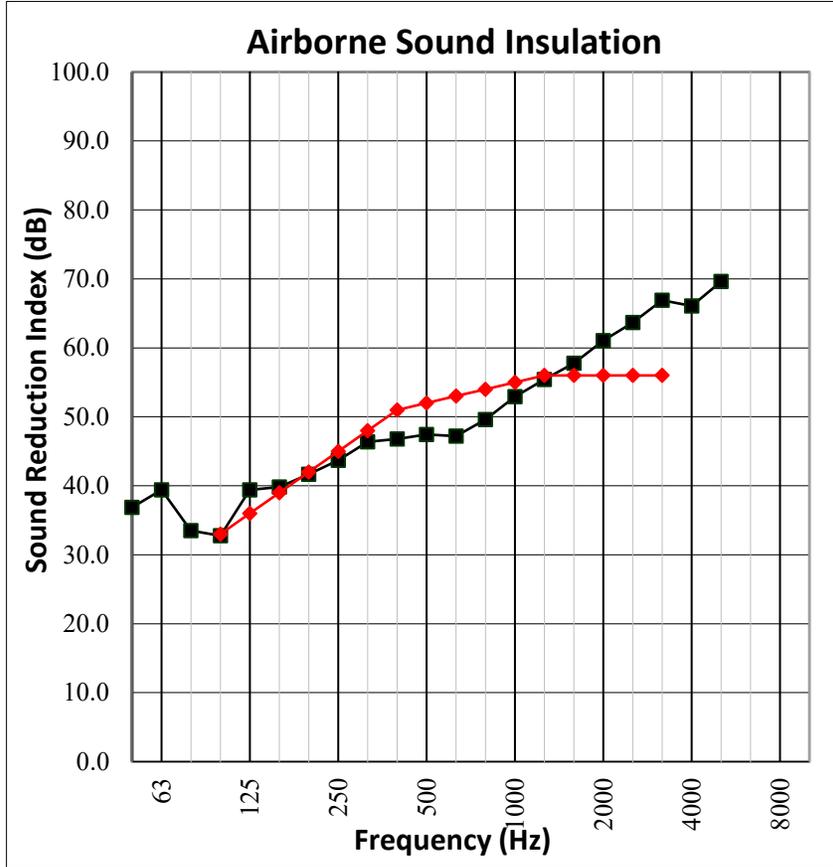
Date: 10/05/22

### SECTION 10

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

<b>TEST DATE</b>	9/21/2022				
<b>DATA FILE NO.</b>	P1663.03				
<b>CLIENT</b>	Karndean Designflooring				
<b>DESCRIPTION</b>	4.5 mm (0.18") LooseLay LLP109 Flooring, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	22.1°C (71.7°F)	<b>Source Temp.</b>	20.2°C (68.4°F)
<b>TECHNICIAN</b>	MSJK	<b>Receive Humidity</b>	60%	<b>Source Humidity</b>	60%

FREQUENCY <i>f</i> Hz	<i>R</i> one-third octave dB
50	36.9
63	39.4
80	33.5
100	32.8
125	39.4
160	39.8
200	41.7
250	43.7
315	46.4
400	46.8
500	47.4
630	47.2
800	49.6
1000	52.9
1250	55.4
1600	57.8
2000	61.0
2500	63.7
3150	66.9
4000	66.1
5000	69.6



Rating in accordance with ISO 717-1:			
$R_w(C; C_{tr}) = 52$ dB	$C_{50-3,150} = -1$ dB	$C_{50-5,000} = 0$ dB	$C_{100-5,000} = 0$ dB
Evaluation based on laboratory measurement results obtained by an engineering method:			
$C_{tr,50-3,150} = -6$ dB	$C_{tr,50-5,000} = -6$ dB	$C_{tr,100-5,000} = -5$ dB	

## TEST REPORT FOR KARNDEAN DESIGNFLOORING

Report No.: P1663.03-113-11-R0

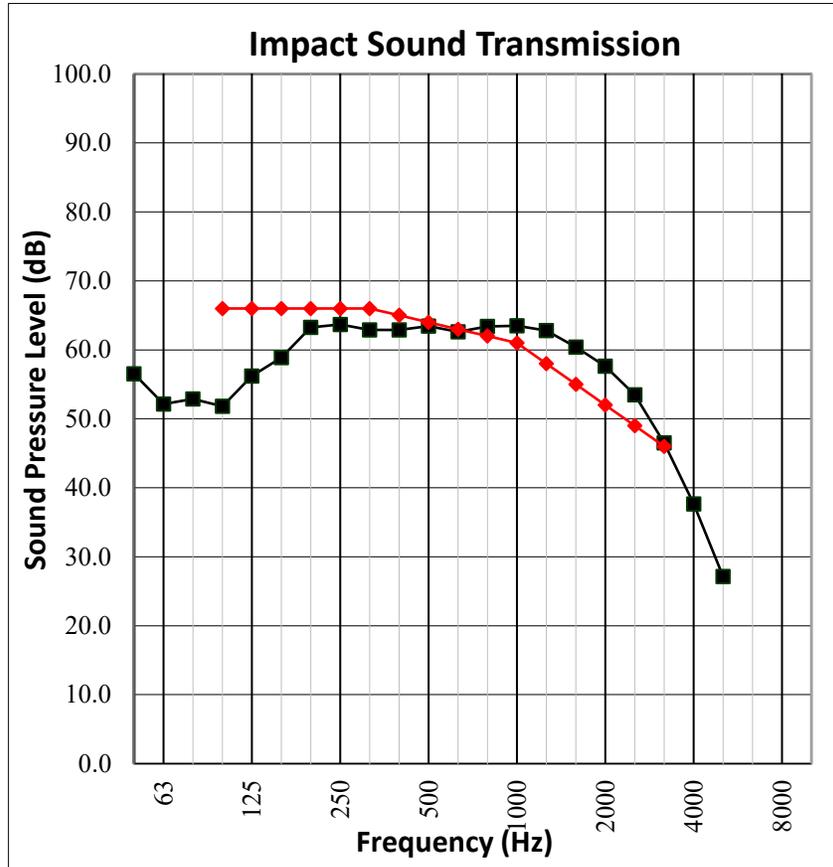
Date: 10/05/22

### SECTION 11

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

<b>TEST DATE</b>	9/21/2022				
<b>DATA FILE NO.</b>	P1663.03				
<b>CLIENT</b>	Karndean Designflooring				
<b>DESCRIPTION</b>	4.5 mm (0.18") LooseLay LLP109 Flooring, 152.4 mm (6") 5000 PSI Concrete Slab				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	22.1°C (71.7°F)	<b>Source Temp.</b>	20.2°C (68.4°F)
<b>TECHNICIAN</b>	MSJK	<b>Receive Humidity</b>	60%	<b>Source Humidity</b>	60%

FREQUENCY <i>f</i> Hz	<i>L<sub>n</sub></i> one-third octave dB
50	56.5
63	52.1
80	52.9
100	51.8
125	56.2
160	58.9
200	63.3
250	63.7
315	62.9
400	62.9
500	63.5
630	62.6
800	63.4
1000	63.5
1250	62.8
1600	60.4
2000	57.6
2500	53.5
3150	46.5
4000	37.7
5000	27.1



Rating in accordance with ISO 717-1

$$L_{n,w}(C_1) = 64 \text{ ( -6 ) dB} \quad C_{1,50-2,500} = -5 \text{ dB}$$

$$\Delta L_w = 14 \text{ dB}$$

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

**TEST REPORT FOR KARNDEAN DESIGNFLOORING**

Report No.: P1663.03-113-11-R0

Date: 10/05/22

**SECTION 13**

**PHOTOGRAPHS**



**Photo No. 1**

**Source Room View of Test Specimen Installation**



**Photo No. 2**

**Receive Room View of Test Specimen Installation**

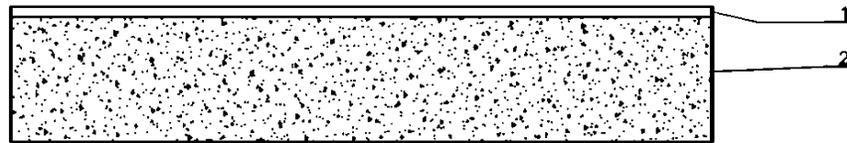
**TEST REPORT FOR KARNDUAN DESIGNFLOORING**

Report No.: P1663.03-113-11-R0

Date: 10/05/22

**SECTION 14**

**DRAWING**



1-Floor Topping

2-Concrete Slab

## TEST REPORT FOR KARNDUAN DESIGNFLOORING

Report No.: P1663.03-113-11-R0

Date: 10/05/22

### SECTION 15

#### REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	10/05/22	N/A	Original Report Issue

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