

Test Report

FOR: **dB Sound Control**
Mt. Airy, NC

Floor Covering Impact Reduction
RAL-IFC18-002

CONDUCTED: 2018-03-21

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ON: Laminate wood flooring over dB Fiber underlayment

TEST METHOD

Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). The test reported in this document conformed explicitly with ASTM E2179-03 (2009): "Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors". The single number rating was calculated according to ASTM E989-06 (2012): "Standard Classification for Determination of Impact Insulation Class (IIC)." The measurements were recorded using a real time analyzer and a rotating microphone boom incorporating a spatial average. The rotation speed of the boom was set at 32 seconds per revolution and the linear integration time of the analyzer was set at 32 seconds. The impact sound pressure levels (ISPL) were measured for each of the twenty-one standard one-third octave bands from 50 Hz through 5000 Hz for both the standard concrete slab and the provided specimen. The laboratory's standard concrete floor is a fully cured 152.40 mm (6.0 in.) thick concrete floor installed directly in the laboratory's 4.27 m (14.0 ft.) by 2.44 m (8 ft.) test opening. A complete description of the measuring procedure and room qualifications is available upon request.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Laminate wood flooring over dB Fiber underlayment. The building contractor and RAL staff compiled a detailed construction specification as follows:

Underlayment

Trade Name:	dB Fiber
Material:	Felt over clear plastic sheet
Installed:	Loose laid over concrete slab, felted side down
Overall Dimensions:	2438.4 mm (96 in.) x 2743.2 mm (108 in.)
Measured Thickness:	3.81 mm (0.15 in.)
Overall Weight:	52.84 kg (116.5 lbs)
Mass per Unit Area:	5.08 kg/m ² (1.04 lb/ft ²)
Joints:	Sealed with tape

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Floor Covering

Material: Wood-look laminate over fiberboard flooring tiles
Installed: Loose laid over underlayment
Tile Dimensions: 1290 mm (50.787 in.) x 194 mm (7.638 in.)
Tile Thickness: 6.6 mm (0.26 in.)
Overall Weight: 62.14 kg (137 lbs)
Mass per Unit Area: 5.97 kg/m² (1.22 lb/ft²)
Joints: Locking edge design

Concrete Slab

Material: Wire-reinforced concrete
Dimensions: 4 @ 609.6 mm (24 in.) x 4267.2 mm (168 in.)
Thickness: 152.4 mm (6.0 in.)
Overall Weight: 3,467.71 kg (7,645 lbs)
Mass per Unit Area: 333.27 kg/m² (68.26 lb/ft²)
Installation: The slab was isolated from the sill by rubber pads
Joints: Underside sealed with acoustical caulk and tape
Top filled with general purpose sand, sealed with ready mix compound

Physical Measures

Size: 2.44 m (96.00 in.) wide by 4.27 m (168.00 in.) long
Thickness: 162.81 mm (6.41 in.)
Weight: 3582.76 kg (7898.50 lbs.)
Mass per Unit Area: 344.31 kg/m² (70.52 lbs./ft²)
Transmission Area: 10.40 m² (112.00 ft²)

Test Aperture

Size: 4.27 m (14.0 ft.) by 2.44 m (8 ft.)
Filler Wall: None
Sealed: Entire periphery (both sides) with dense mastic

Test Environment

Source Room

Volume: 132.6 m³ (4,681.0 ft³)
Temperature: 23±0°C (73±0°F)
Humidity: 50±1%

Receive Room

Volume: 81.7 m³ (2,884.3 ft³)
Temperature: 23±0°C (74±1°F)
Humidity: 50±0%

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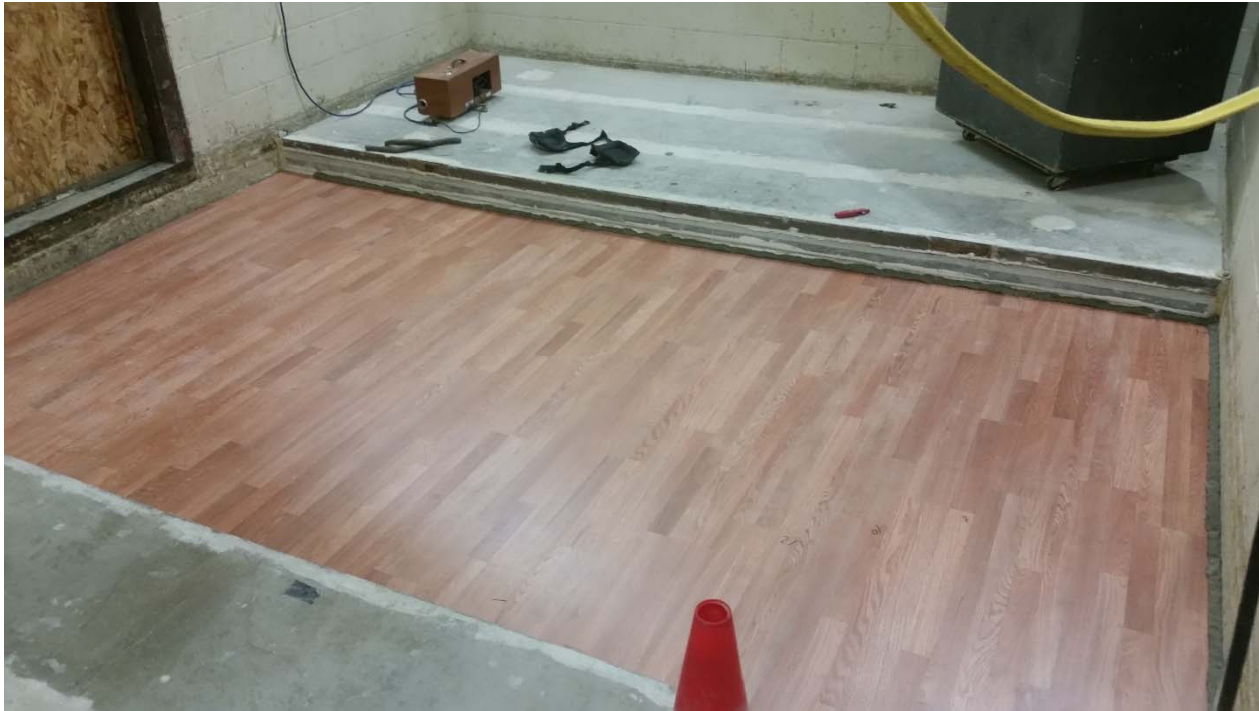


Figure 1 – Specimen mounted in test opening



Figure 2 – Underlayment partially installed on concrete slab

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Figure 3 – Underside of test specimen

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TEST RESULTS

1/3 Octave Center Frequency (Hz)	Normalized Impact SPL, L_0 , Bare Standard Concrete Floor (dB)	Normalized Impact SPL, L_c , Floor Covering Installed (dB)	Reduction in Impact SPL, L_d , ($L_0 - L_c$), (dB)	Impact SPL of Floor Covering on a Reference Concrete Slab, $L_{ref, c}$, (dB)
100	55	53	2.0	65.0
125	61	59	2.0	65.5
160	61	57	4.0	64.0
200	64	60	4.0	64.5
250	68	61	7.0	62.0
315	72	65	7.0	62.5
400	70	57	13.0	57.0
500	72	54	18.0	52.5
630	71	45	26.0	45.0
800	71	42	29.0	42.5
1000	70	37	33.0	39.0
1250	71	33	38.0	34.0
1600	74	30	44.0	28.0
2000	71	25	46.0	26.0
2500	70	20	50.0	22.0
3150	72	17	55.0	17.0

Increase in Impact Insulation Class $\Delta IIC = 25$

Impact Insulation Class, IIC_c for $L_{ref, c}$

$IIC_c = 53$

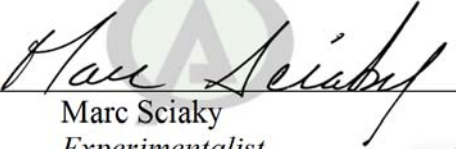
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TEST RESULTS (Continued)

The measured impact sound pressure levels (ISPL) are tabulated in each of the twenty-one standard one third octave bands from 100 Hz through 3150 Hz for both the standard concrete slab and the three sample materials. The reduction in ISPL calculated for the floor covering has been applied to a reference concrete floor with an IIC = 28 as described in the standard. The increase in impact insulation class, ΔIIC as well as the IIC_c for the floor covering on a reference concrete slab has also been calculated. An * indicates that the value has been adjusted for background noise levels and reflects a lower limit. A graphic presentation of the data appears on the following page.

Tested by 
Marc Sciaky
Experimentalist

Report by 
Malcolm Kelly
Acoustician

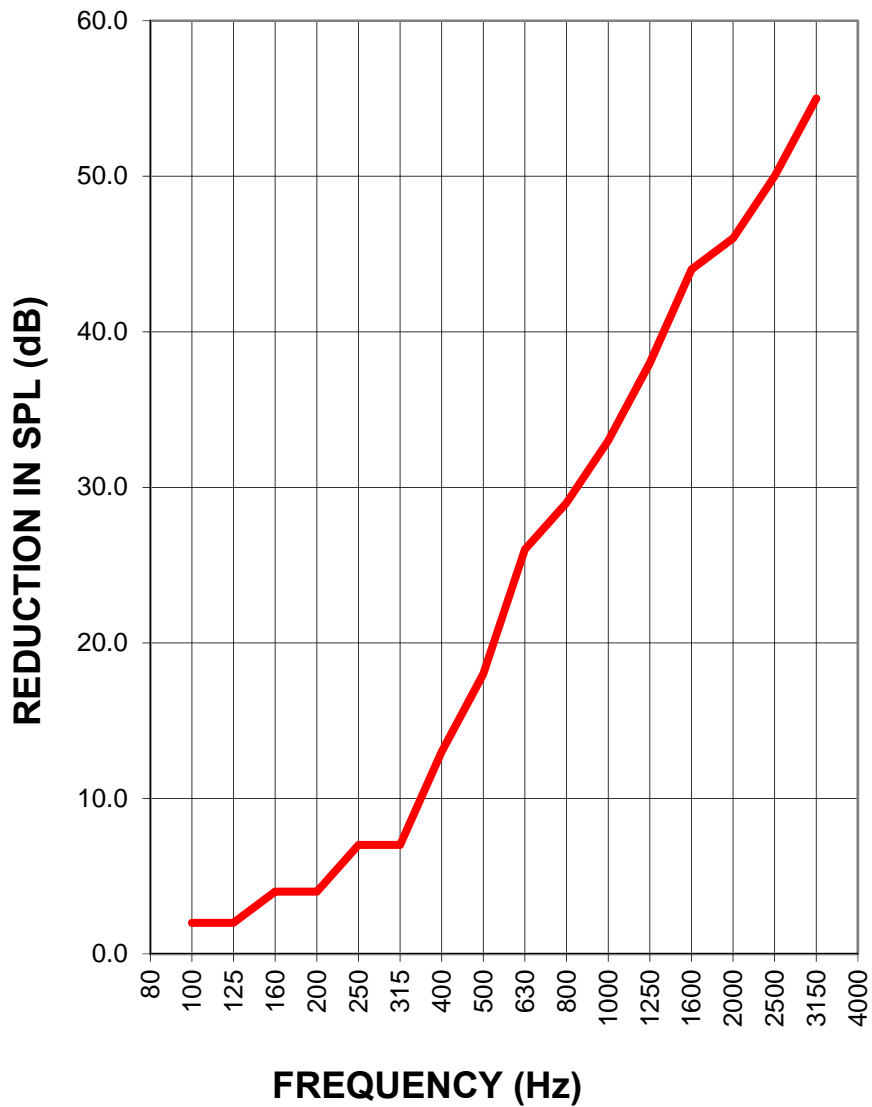
Approved by 
Eric P. Wolfram
Laboratory Manager

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ΔIIC=25

**IMPACT REDUCTION OF FLOOR COVERING
ON A CONCRETE FLOOR**



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APPENDIX A: Instruments of Traceability

Specimen: Laminate wood flooring over dB Fiber underlayment (See Full Report)

<u>Description</u>	<u>Model</u>	<u>Serial Number</u>	<u>Date of Certification</u>	<u>Calibration Due</u>
Bruel & Kjaer Pulse Analyzer - System4	Type 3560-C	2639093	2017-08-02	2018-08-02
Bruel & Kjaer Mic And Preamp D	Type 4943-B-001	2311440	2017-09-22	2018-09-22
Bruel & Kjaer Tapping Machine-WoodCase	3204	226940	2017-07-11	2018-07-11
Bruel & Kjaer Pistonphone	Type 4228	2781248	2017-08-02	2018-08-02
EXTECH_62	SD700	A.083662	2017-11-20	2018-11-20
EXTECH_63	SD700	A.083663	2017-11-20	2018-11-20

END