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An ALION Technical Center

Test Report

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WALLACE CLEMENT SABINE

FOR: **Solitrade**
Charlotte, NC

Floor Covering Impact Reduction
RAL-IFC18-003

CONDUCTED: 2018-03-21

ON: Laminate wood flooring over SoliBlock Floor HP+ 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 SoliBlock Floor HP+ underlayment. The building contractor and RAL staff compiled a detailed construction specification as follows:

Underlayment

Trade Name:	SoliBlock Floor HP+
Material:	Felt over vinyl 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:	5.97 mm (0.235 in.)
Overall Weight:	40.37 kg (89 lbs)
Mass per Unit Area:	3.88 kg/m^2 (0.79 lb/ft^2)
Joints:	Sealed with tape

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/m^2 (1.22 lb/ft^2)
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/m^2 (68.26 lb/ft^2)
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:	165.10 mm (6.50 in.)
Weight:	3570.29 kg (7871.00 lbs.)
Mass per Unit Area:	343.14 kg/m^2 (70.28 lbs./ft^2)
Transmission Area:	10.40 m^2 (112.00 ft^2)

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 m^3 (4,681.0 ft^3)
Temperature:	23±0ºC (73±0ºF)
Humidity:	50±1%

Receive Room

Volume:	81.7 m^3 (2,884.3 ft^3)
Temperature:	23±0ºC (74±0ºF)
Humidity:	52±1%

Figure 1 – Specimen mounted in test opening

Figure 2 – Underlayment installed over concrete slab

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, $(L_o - L_c)$, (dB)	Impact SPL of Floor Covering on a Reference Concrete Slab, $L_{ref,c}$, (dB)
100	55	53	2.0	65.0
125	61	58	3.0	64.5
160	61	57	4.0	64.0
200	64	59	5.0	63.5
250	68	61	7.0	62.0
315	72	63	9.0	60.5
400	70	54	16.0	54.0
500	72	52	20.0	50.5
630	71	43	28.0	43.0
800	71	39	32.0	39.5
1000	70	33	37.0	35.0
1250	71	29	42.0	30.0
1600	74	26	48.0	24.0
2000	71	21	50.0	22.0
2500	70	13	57.0	15.0
3150	72	9	63.0	9.0

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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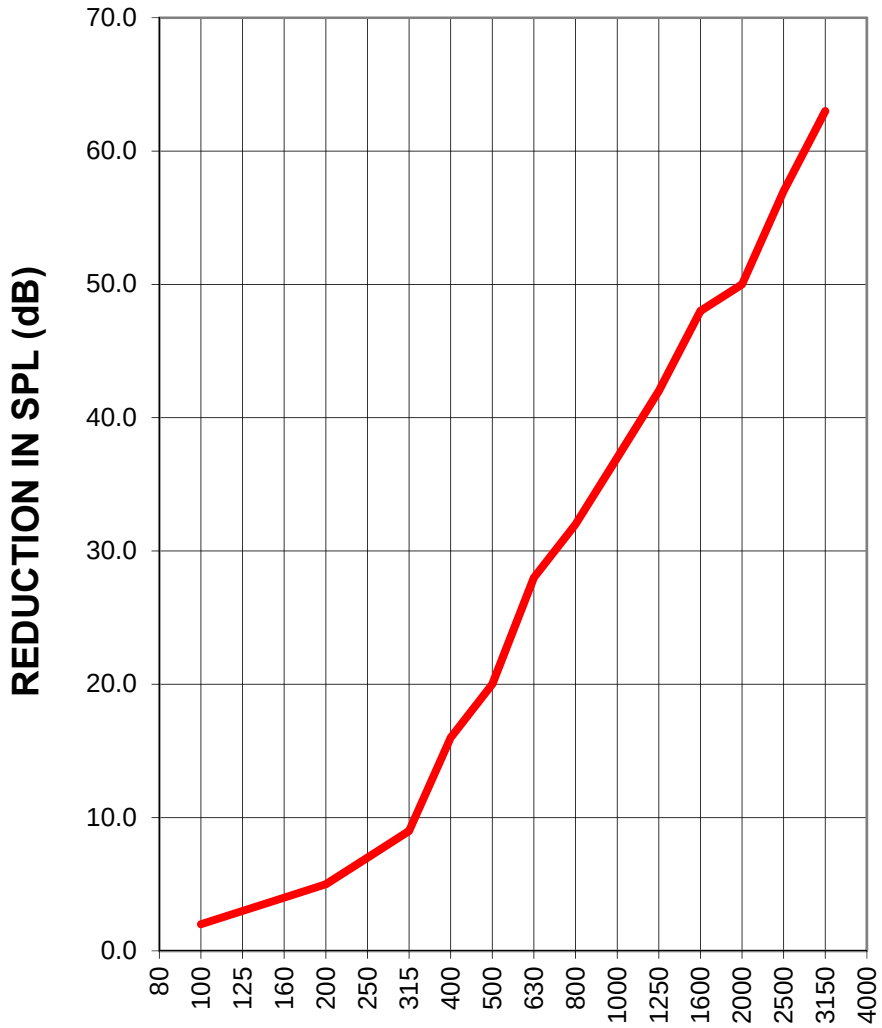
Date: 2019.08.30 15:54:20 -05'00'

Floor Covering Impact Reduction

Laminate wood flooring over SoliBlock Floor HP+ underlayment



ΔIIC=25

IMPACT REDUCTION OF FLOOR COVERING ON A CONCRETE FLOOR

APPENDIX A: Instruments of Traceability

Specimen: Laminate wood flooring over SoliBlock Floor HP+ underlayment (See Full Report)

Description	Model	Serial Number	Date of Certification	Calibration Due
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

APPENDIX C: Revisions to Original Test Report

Date	Revision
2019-08-30	Page 1-8: The original manufacturer/requester identification and specimen designation were changed to facilitate a private label sales agreement. The original requester has provided a letter to RAL on their company letterhead certifying that the product identified has not changed in materials, composition, or manufacturing methods since the original test date and the product sold under the private label agreement is exactly identical to the original specimen described in the test report and sourced from the same manufacturing process. - EPW

END