

RIVERBANK ACOUSTICAL LABORATORIES

1512 S. Batavia Avenue
Geneva, Illinois 60134

Alion Science and Technology

630/232-0104
Found 1918 By
Wallace Clement Sabine

Floor Covering Impact Reduction Test

Conducted: Oct 16, 2003

Test No: RAL™-IFC03-003

FOR: Serenity Mat Soundproofing Underlay

ON: 1/2" Hardwood Finish Flooring on Soft 3 mm Underpad

TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E2179-03 and E413-87, as well as other pertinent standards. 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 64. seconds per revolution and the linear integration time of the analyzer was set at 150 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 mm (6 in.) thick concrete floor installed directly in the laboratory's 4.27 m (14 ft) by 6.10 m (20 ft) test opening. The floor was sealed on the periphery (both sides) with a dense mastic. A description of the measurement procedure is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated as 1/2" hardwood finish flooring on soft 3 mm underpad. The test specimen was classified as Category II (rigid homogenous or complex surface materials) and was comprised of a section of hardwood flooring placed over a 3 mm thick rubber isolation material. The rubber isolation material as measured was 3 mm (0.12 in.) thick by 4.27 m (168 in.) wide by 6.10 m (240 in.) long and weighed 59.2 kg (130.5 lbs). The finish flooring was constructed from 12.7 mm (0.5 in.) thick by 178 mm (7 in.) wide pieces of locking tongue and groove 6 ply engineered prefinished hardwood flooring. The finish floor as measured was 12.7 mm (0.5 in.) thick by 3.24 m (127.5 in.) wide by 3.38 m (133.25 in.) long and weighed 82.4 kg (181.75 lbs). Total weight of the specimen was 141.6 kg (312.25 lbs).

MOUNTING

The specimen was loose laid over the laboratory's standard concrete floor. The source and receiving room temperatures at the time of the test were 25 ± 1 °C (77 ± 1 °F) and 59 ± 2 % relative humidity. The receive reverberation room volume was 80.7 m³ (2850 ft³).

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Test Results

1/3 Octave Center Frequency (Hz)	Impact SPL, $L_{o,}$ Bare Standard Concrete Floor (dB)	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)
50	67.2	63.6	3.6	
63	63.2	60.2	3.0	
80	60.7	59.1	1.6	
100	66.3	65.9	0.4	67.0
125	69.6	69.6	0.0	67.5
160	69.9	68.4	1.5	68.0
200	71.1	68.4	2.8	68.5
250	72.8	72.0	0.7	69.0
315	73.3	72.4	0.8	69.5
400	76.1	71.1	5.1	70.0
500	76.3	68.0	8.3	70.5
630	76.1	63.6	12.5	71.0
800	77.3	58.3	19.1	71.5
1000	77.8	53.4	24.4	72.0
1250	78.2	48.1	30.1	72.0
1600	79.4	44.8	34.5	72.0
2000	78.0	39.2	38.7	72.0
2500	77.0	33.8	43.2	72.0
3150	76.1	29.0	47.0	72.0
4000	73.2	23.8	49.4	
5000	69.3	19.1	50.2	

Increase in Impact Insulation Class IIC = 21

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

IIC_c = 49

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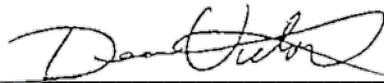
Floor Covering Impact Reduction Test

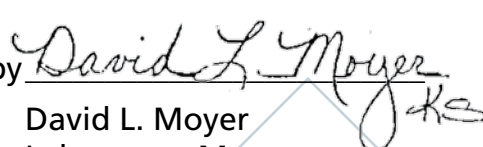
Conducted: Oct 16, 2003

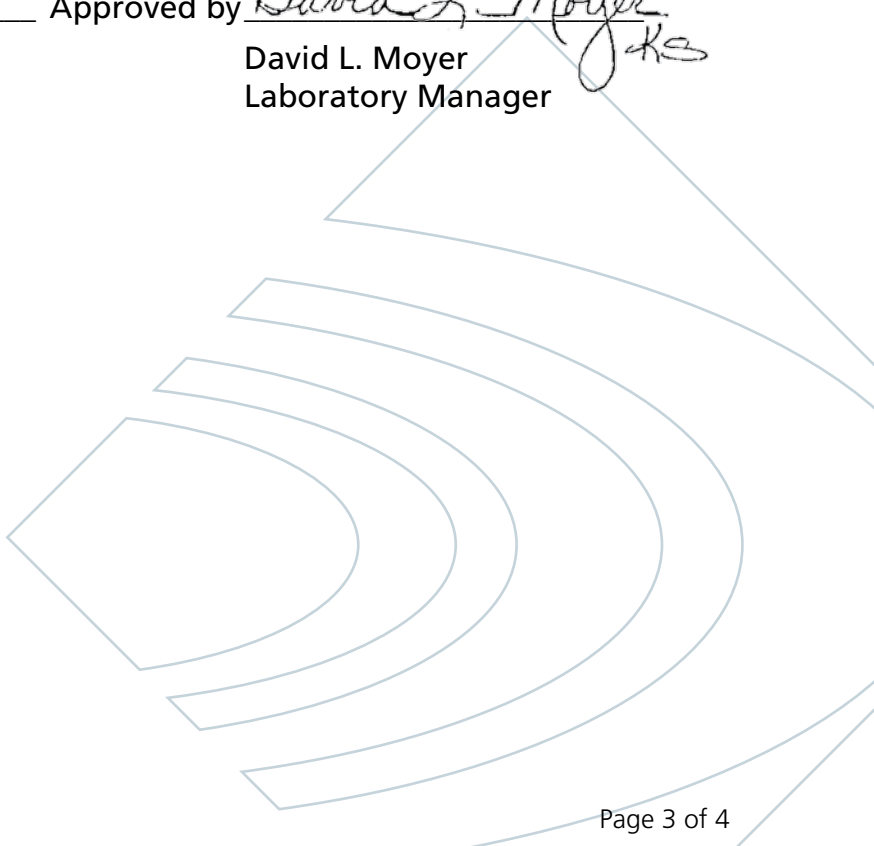
Test No: RAL™-IFC03-003

TEST RESULTS

The measured impact sound pressure levels (ISPL) are tabulated in each of the twenty-one standard one-third octave bands from 50 Hz through 5000 Hz for both the standard concrete slab and the specimen. 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 
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Approved by 
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