CSIRO ACOUSTIC MEASUREMENT REPORT.

Acoustics Testing Laboratory, Infrastructure Technologies, Division of Materials Science and Engineering
Commonwealth Scientific and Industrial Research Organisation, 37 Graham Rd, Highett, Vic 3190 Australia

Report No:
INR191-01-1

Client: Inovar Pty Ltd
2 Wella Way, Somersby, NSW 2250

Measurement Type: Impact Sound Insulation (Floor)

AS ISO 140.6–2006 *"Laboratory measurements of impact sound insulation of floors"*
AS ISO 140.8–2006 *"Laboratory measurements of reduction of transmitted impact noise by floor coverings on a heavyweight standard floor"*
AS ISO 717.2–2004 *"Acoustics–Rating of sound insulation in buildings and of building elements, Part 2: Impact sound insulation"*

Test Specimen

Description: Vinyl planks loose laid on a 150 mm thick reinforced concrete slab.

Details:

a) "Inovar Loose Lay LVT Vinyl Tiles" (plank dimensions 1219 x 177.8 x 5/0.55 mm), approx 8.2 kg/m^2, pattern LA5343, batch/lot number 13.10.10. Laid directly on item b)
b) 150 mm thick reinforced concrete slab (test floor of laboratory); no ceiling below.

Installation:

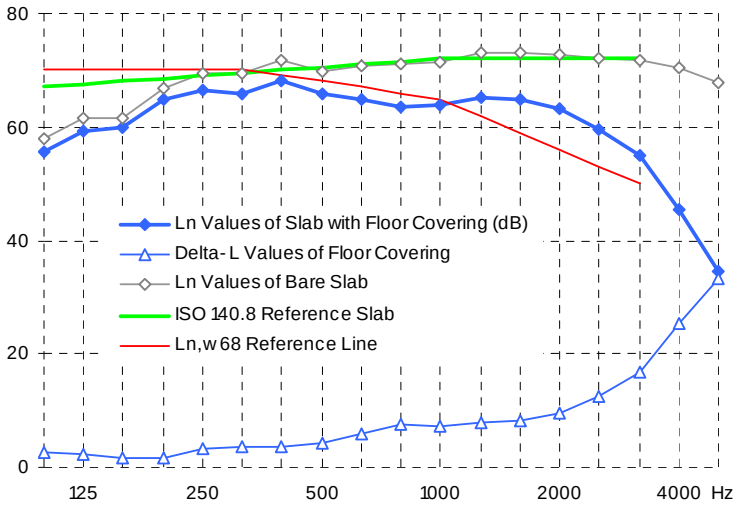
- The vinyl tiles were loose laid directly on the concrete slab, covering the entire area of the slab, with joins staggered as shown and with minimal gaps between adjacent tiles.
- Installation was carried out by the laboratory's personnel.

View showing section of vinyl plank resting on bare concrete

As tested: floor covering laid in laboratory

Measurement Details & Results (dB)

Freq (Hz)	AS ISO 140.6	AS ISO 140.8	
	L_n	$L_{n,0}$ (Bare slab)	ΔL
100	55.5	58.1	2.6
125	59.3	61.6	2.3
160	59.8	61.5	1.7
200	65.0	66.8	1.8
250	66.4	69.6	3.2
315	65.7	69.4	3.7
400	68.1	71.7	3.6
500	65.7	69.9	4.2
630	64.9	70.9	6.0
800	63.4	71.0	7.6
1000	64.0	71.4	7.4
1250	65.2	73.0	7.8
1600	64.8	73.1	8.3
2000	63.2	72.9	9.7
2500	59.7	72.2	12.5
3150	54.9	71.8	16.9
4000	45.3	70.5	25.2
5000	34.5	67.9	33.4



Performance Index Numbers (laboratory method)

$L_{n,w}$ (C_I)= 68 (-7)
IIC = 42
ΔL_w = 11
ΔL_{lin} = 5

Tapping machine placed in eight different locations across the test floor area; sound levels measured over a whole microphone rotation (35 sec) at each location, and results averaged.

Measurement Conditions
Upper (source) room: 18 ℃, 85 % RH
Lower (receiving) room: 20 ℃, 76 % RH
Atmospheric pressure: 1008 HPa
Date of measurement: 10 April 2014

Notes, Deviations etc

1. Test specimen material suffered no visible damage during the test.
2. Physical characteristics of materials may be suppliers' nominal figures; not necessarily verified by CSIRO.
3. IIC has been calculated according to ASTM E989-89; laboratory requirements for which may differ from those of the AS ISO 140 standards.

Issuing Authority

Signed on behalf of CSIRO: ……
David Truett

Date report issued: 28 April 2014

Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-a-4/2
Microphone/preamp: • Brüel & Kjær type 4166 microphone on type 2619 preamp, continuously rotating at 1.67 m radius with 35 sec period
Noise source: • Brüel & Kjær type 3204 tapping machine (complies with ISO 140)
Calibration: • Brüel & Kjær type 4228 pistonphone: Nov 2012 (NATA cal)
• Analyser: Feb 2013 (NATA cal)
• Overall sensitivity calibrated to pistonphone before use

Laboratory Construction

General: • 300 mm thick concrete • no parallel faces (irregular pentagon, source room with sloping ceiling, receiving room with sloping floor)
Source room: • approx 203 m^3 volume • 12 randomly oriented stationary diffuser boards
Receiving room: • approx 105 m^3 volume • 3 randomly oriented stationary diffuser boards
Floor slab: • 3.66 x 3.20 m (11.7 m^2) reinforced concrete, 150 mm thick • resting on rubber faced steel lip in aperture in surrounding floor • top surface level with surrounding floor