



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:
INR197-01-1

Client: Kenbrock Flooring Pty Ltd
Unit 9, 80 Kremzow Road, Brendale QLD 4500

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: Kenbrock "SMARTDROP ACOUSTIC" multilayer composite floor covering planks, laid resting directly on a 150 mm thick reinforced concrete slab.

Details:

- a) Kenbrock "SMARTDROP ACOUSTIC" composite floor covering planks. Composite fibreglass reinforced recycled PVC. ♦ Top layer "Dura Coat", over; ♦ 0.5 mm wear layer, over; ♦ Decor layer (rustic timber appearance), over; ♦ Upper recycled vinyl layer, over; ♦ Fibreglass core, over; ♦ Lower recycled vinyl layer, over; ♦ Sound barrier backing layer ♦ Tile dimensions: 1219 x 178 mm x 5.3 mm thick
- b) 150 mm thick reinforced concrete slab (test floor of laboratory); no ceiling below.

Installation:

- The flooring planks (item a) were loose-laid on directly top of the concrete slab (item b) and pushed against each other to avoid gaps between adjacent planks; no fastening materials or methods were used.
- Installation was carried out by the laboratory's personnel.



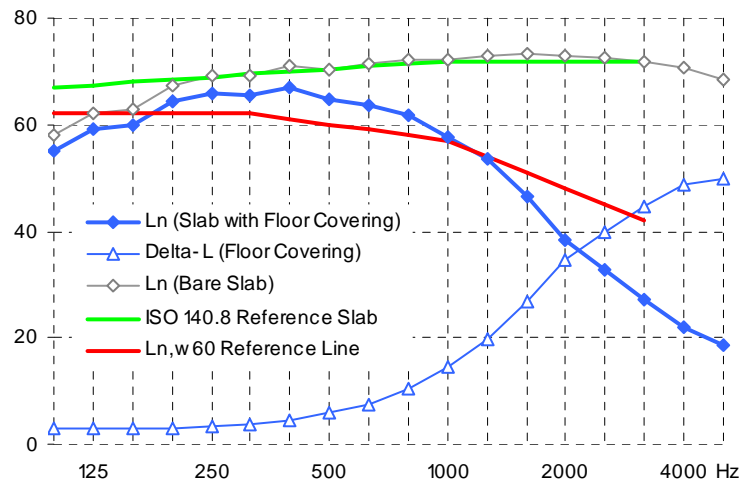
Edge view showing floor covering plank resting on concrete floor



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	54.9	58.0	3.1
125	59.0	62.0	3.0
160	59.9	62.9	3.0
200	64.4	67.2	2.8
250	65.9	69.2	3.3
315	65.5	69.2	3.7
400	66.9	71.2	4.3
500	64.6	70.4	5.8
630	63.7	71.3	7.6
800	61.8	72.1	10.3
1000	57.6	72.1	14.5
1250	53.5	73.1	19.6
1600	46.5	73.2	26.7
2000	38.5	73.1	34.6
2500	32.6	72.6	40.0
3150	27.3	71.9	44.6
4000	22.1	70.8	48.7
5000	18.6	68.5	49.9



Performance Index Numbers (laboratory method)

$L_{n,w}(C_i) = 60 (-1)$
IIC = 50
 $\Delta L_w = 17$
 $\Delta L_{lin} = 7$

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: 23 °C, 53 % RH
Lower (receiving) room: 21 °C, 65 % RH
Atmospheric pressure: 1016 hPa
Date of measurement: 9 February 2015

Notes, Deviations etc

1. \leq and \geq indicate results, if any, where measurability was limited by proximity to background level.
2. Test specimen material suffered no visible damage during the test.
3. Physical characteristics of materials may be suppliers' nominal figures; not necessarily verified by CSIRO.
4. 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:

13 February 2015

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 (4 stationary microphones used for reverberation measurement)
Noise source: • Brüel & Kjær Type 3204 tapping machine (complies with ISO 140)
Calibration: • Brüel & Kjær Type 4228 pistonphone: Apr 2014 (NATA cal)
• Analyser: Feb 2013 (NATA cal)

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 m³ volume • 12 randomly oriented stationary diffuser boards
Receiving room: • approx 105 m³ volume • 3 randomly oriented stationary diffuser boards
Floor slab: • 3.66 x 3.20 m (11.7 m²) reinforced concrete, 150 mm thick • resting on rubber faced steel lip in aperture in surrounding floor • top surface level with surrounding floor