



CSIRO ACOUSTIC MEASUREMENT REPORT

Commonwealth Scientific and Industrial Research Organisation, Infrastructure Technologies
Acoustics Testing Laboratory, Gate 5, 2 Normanby Road, Clayton, Vic 3168 Australia

Report No:
INR213-02-1

Client: Gerflor Australasia Pty Ltd
17 Cato Street, Hawthorn East, Vic 3123

Measurement Type: Impact Sound Insulation (Floor)

AS ISO 140.6-2006 "Laboratory measurement of impact sound insulation of floors"
AS ISO 140.8-2006 "Laboratory measurement 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 (3.6 x 3.0 m test floor area)

Description: Gerflor Taralay Impression Comfort vinyl floor covering,
loose laid on a 150 mm thick concrete floor.

Materials:

- a) Gerflor Taralay Impression Comfort vinyl floor covering, acoustic foam backed, with very high density (VHD) foam, reinforced with glass fibre, with the printed design layer covered by a 0.65 mm thick wear layer with densely pressed colour chips incorporated into the wear layer. The floor covering material is manufactured in a range of aesthetic designs and colours, of identical manufacture except in relation to their appearance. The test specimen provided was designated "Renzo Pecan". The material was supplied on a continuous roll, 2 m wide, total thickness 3 mm, mass-per-unit-area 2.9 kg/m².
- b) 150 mm thick concrete test floor of laboratory (estimated 360 kg/m²); no ceiling below.

Installation details:

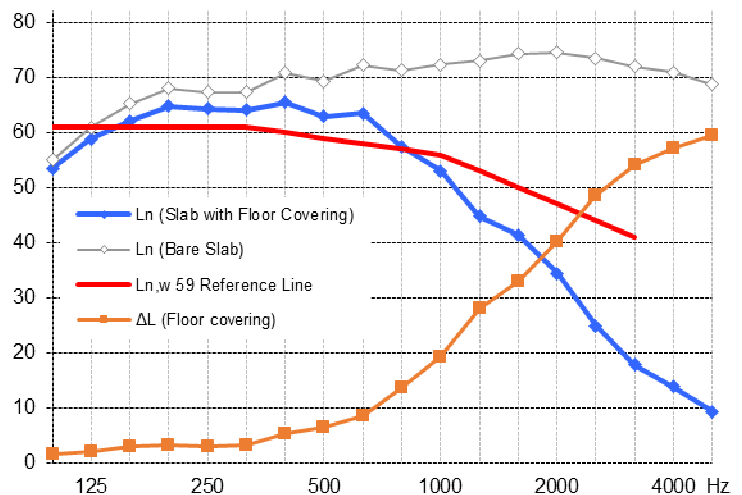
- The concrete test floor was swept to remove dust and other foreign matter.
- Floor covering, item a), was rolled out directly over the concrete sub floor; two pieces were used to span the width of the test floor (tightly butted together).
- Excess floor covering material was allowed to rest on the surrounding area, which was flush with the test floor.
- No adhesive materials were used in installation.
- Installation was carried out by laboratory staff.



Test specimen material

Measurement Details & Results

Freq (Hz)	Specimen Floor L _n (dB)	Bare Concrete Floor L _{n,0} (dB)	Improvement ΔL (dB)
100	53.5	55.0	1.5
125	58.9	60.9	2.0
160	62.1	65.2	3.1
200	64.8	68.0	3.2
250	64.3	67.3	3.0
315	64.1	67.3	3.2
400	65.5	70.8	5.3
500	62.9	69.3	6.4
630	63.5	72.2	8.7
800	57.5	71.3	13.8
1000	53.0	72.3	19.3
1250	44.8	73.0	28.2
1600	41.4	74.3	32.9
2000	34.4	74.6	40.2
2500	24.9	73.5	48.6
3150	17.8	72.0	54.2
4000	13.9	71.0	57.1
5000	9.3	68.7	59.4



Performance Index Numbers (laboratory method)

L_{n,w} (C) = 59 (-1)
IIC = 51
ΔL_w = 17
ΔL_{lin} = 7

The tapping machine was placed diagonally in eight different locations across the test floor area; sound levels in the room below were measured over a whole microphone rotation (33 sec) at each location, and the results averaged.

Measurement Conditions

Date of measurement: 20 June 2016
On top of floor: 12 °C, 85 % R.H.
Chamber underneath floor: 12 °C, 81 % R.H.
Atmospheric pressure: 993 mBar

Notes, Deviations etc

1. ≤ and ≥ signify results, if any, where measurement was limited by proximity to background level.
2. L_n = dB re 20μPa, corrected to mean sea level pressure; ΔL = dB re bare/reference floor.
3. L_n results represent noise levels; i.e. lower = quieter. For ΔL and IIC results, higher = quieter.
4. IIC has been calculated according to ASTM E989-89; laboratory requirements for which may differ from those of the AS ISO 140.6 and AS ISO 140.8 standards.
5. Testing was carried out unloaded; the weight of the tapping machine being the only load on top of the floor.
6. Physical characteristics given for materials may be as per supplier's advice; not necessarily verified by CSIRO.
7. The test specimen material suffered no visible damage during the course of the test.

Issuing Authority

Signed: David Truett
Date: 31 July 2016

Acoustic Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-A-4/2
Microphone/preamp: • Brüel & Kjær type 4166 microphone on type 2669 preamp, rotating continuously with 33 sec period about 1.31 m radius.
Noise source: • Brüel & Kjær type 3204 tapping machine (complies with ISO 140)
Calibration: • Brüel & Kjær type 4228 Pistonphone: Feb 2016 (NATA cal)
• Analyser: Feb 2016 (NATA cal)
• Pistonphone was used to set overall sensitivity of measurement system at the time of measurement.

Laboratory Construction

Chambers: • 300 mm thick concrete • parallelepiped with dimensional proportions 1:1.3:1.6 for uniform distribution of room modes
• source room (upper): 200 m³ vol, 212 m² surface area (approx.)
• receiving room (lower): 105 m² vol, 135 m² surface area (approx.).
Diffusers: • None.
Test floor: • Homogeneous heavyweight concrete slab, 150 mm thick, 3.58 x 2.98 m, resting on a 10 mm thick rubber seal on a full perimeter support ledge in the upper chamber; the perimeter gap filled with sand, with backing rod on top.