

Client: Kenbrock Flooring Pty Ltd
22-24 Edison Road, Dandenong South, Vic 3175

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 117.2:2004 "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:

- Kenbrock waterproof hybrid flooring planks laid without adhesives, directly on:
- 150 mm thick concrete slab floor (approx. 360 kg/m², no ceiling below).

Product designations:

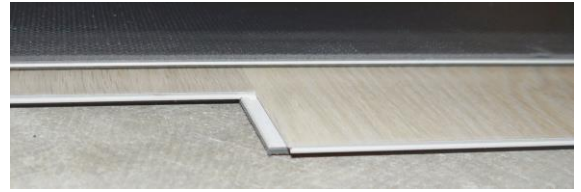
The client advises that the waterproof hybrid flooring planks tested may be sold under different names:- • *Aqualife*, • *Kenect 5G*, or • *Kenbrock Hybrid*; the products being of identical manufacture, differing only in respect of the trade names and the timber appearance/colour of the photographic layer below the surface. The test specimen planks were boxed and labelled *Aqualife*, *Colour No. AQL1405*.

Flooring plank details:⁷

- The product is a waterproof multilayer hybrid flooring plank, consisting of a solid polymer and limestone core, backed with a vinyl stability layer and IXPE resilient acoustic backing, topped with vinyl comfort layer, photographic layer carrying the plank's timber appearance, 0.5 mm wear layer with woodgrain texture, and surface protection layer reinforced with aluminium oxide.
- 9 x 60" coverage per plank (228.6 x 1524 mm), with interlocking edge profile; overall thickness 6.5 mm.
- Weight: 9.7 kg/m² (one plank selected at random was weighed: 3.364 kg).

Installation details:

- The concrete test floor of the laboratory was scraped, swept and vacuumed.
- The client's floor covering planks were laid directly on the concrete test floor, cut in half as required to enable joints to be staggered between adjacent rows, and carefully mated together with their interlocking edge profile.
- Installation was carried out by laboratory staff.



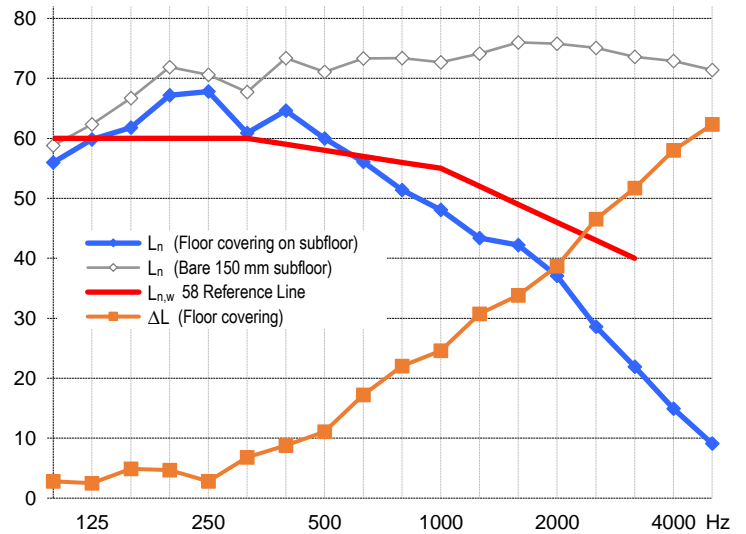
Close up of flooring: top and bottom faces, and edge profile.



Test specimen installed in laboratory for test.

Measurement Details & Results⁴

Freq (Hz)	Specimen Floor L _n (dB)	Bare Concrete Floor L _{n,0} (dB)	Improvement ΔL (dB)
100	56.0	58.8	2.8
125	59.8	62.3	2.5
160	61.8	66.7	4.9
200	67.2	71.9	4.7
250	67.8	70.6	2.8
315	60.9	67.7	6.8
400	64.6	73.4	8.8
500	60.0	71.1	11.1
630	56.1	73.3	17.2
800	51.4	73.4	22.0
1000	48.1	72.7	24.6
1250	43.4	74.1	30.7
1600	42.2	76.0	33.8
2000	37.1	75.8	38.7
2500	28.6	75.1	46.5
3150	21.9	73.6	51.7
4000	14.9	72.9	58.0
5000	9.1	71.4	62.3



Performance Index Numbers (laboratory method)

L_{n,w} (C_i) = 58 (0) ie L_{n,w} = 58
IIC⁵ = 52
ΔL_w = 20
ΔL_{lin} = 9
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	With Floor Covering	Bare Concrete Floor
Date of measurement:	4 May 2018	4 May 2018
On top of floor:	18 °C, 56 % R.H.	18 °C, 52 % R.H.
Chamber underneath floor:	17 °C, 73 % R.H.	17 °C, 71 % R.H.
Atmospheric pressure:	1004 mBar	1003 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, ΔL = dB re bare floor.
3. Bare slab indices: L_{n,w} (C_i) = 81 (-12), IIC = 26.
4. L_n results represent noise levels; i.e. lower = quieter. For ΔL and IIC results, higher = quieter.
5. 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.
6. Testing was carried out unloaded; the weight of the tapping machine being the only load on top of the floor.
7. Physical characteristics given for materials may be as per supplier's advice; not necessarily verified by CSIRO.
8. The test specimen material suffered no visible damage during the course of the test.

Issuing Authority

This report is of same test as INR249-02-1; additional product designations being included.

Signed:
Date: 16 May 2018

Acoustic Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-A-4/2
Microphone/preamp: • GRAS 40AP microphone on Brüel & Kjær 2669 preamp, rotating continuously with 33 sec period about 1.32 m radius.
Noise source: • Norsonic Nor277 tapping machine (complies with ISO 140)
Calibration: • Brüel & Kjær type 4231 Calibrator: Jun 2017 (NATA cal)
• Analyser: Feb 2016 (NATA cal)
• Sensitivity of measurement system was calibrated against the calibrator 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 m³ vol, 135 m² surface area (approx.).
Diffusers: • 200 m³ room: 20 diffusers (approx 40 m²) • 100 m³ room: 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.