

**Client:** Regupol (Australia) Pty Ltd  
155 Smeaton Grange Road, Smeaton Grange, NSW 2567

**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** (Area of concrete test floor: 10.8 m<sup>2</sup> [3.6 x 3.0 m])

**Description:** Regupol everroll® Tone 'Goa' 12 mm Rubber Flooring, adhered to 150 mm thick concrete slab floor, no ceiling below.

**Materials:**

- a) Regupol everroll® Tone 'Goa' 12 mm Rubber Flooring, made from post-consumer and pre-consumer recycled materials incl. EPDM, density: 1060 kg/m<sup>3</sup>; area-density: 12.7 kg/m<sup>2</sup>.
- b) Roberts R656 pressure sensitive floor covering adhesive.
- c) Concrete slab sub floor, 150 mm thick, 360 kg/m<sup>2</sup> (approx).

**Installation details:**

- The concrete floor [item c] was scraped and swept in preparation for flooring installation.
- Adhesive [item b] was applied to the concrete floor with a 1.6 mm notch trowel and allowed to dry until clear (approx 1/2 hour).
- Other flooring materials were laid on the adhesive for testing and then carefully peeled off, leaving the adhesive intact on the subfloor. The adhesive was examined and verified by the client as remaining sufficiently sticky to establish an adhesive bond when laying this material.<sup>9</sup>
- The flooring [item a] was supplied in the form of nine 1.2 x 1.0 m pieces, accurately and cleanly cut, and transported to the laboratory flat on a pallet. The pieces of flooring were installed by laying them on the adhesive and pressing down to form a bond; the nine sections of floor covering were arranged to form a continuous rectangular area (without gaps) completely covering the 150 mm thick concrete subfloor.
- Installation was carried out by the client.
- Impact sound testing was carried out immediately following installation.



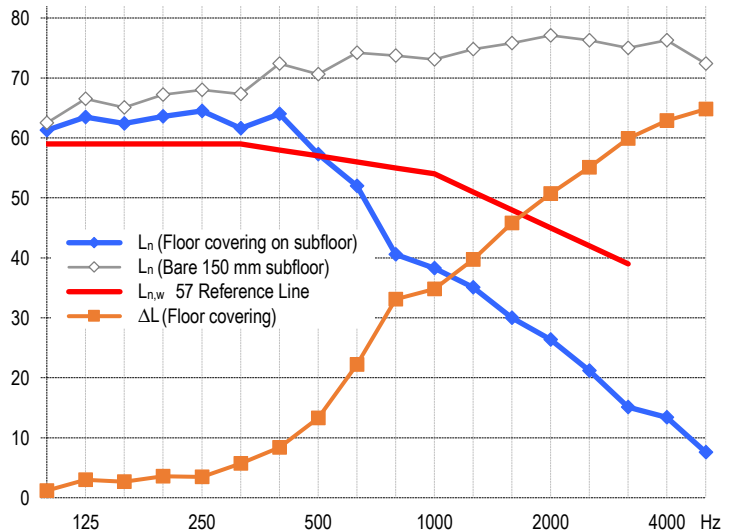
Close-up of flooring, edge view.



Test specimen installed in laboratory for test.

**Measurement Details & Results**<sup>1,2,4</sup>

Freq. (Hz)	Specimen Floor		Improvement ΔL (dB)
	L <sub>n</sub> (dB)	Bare Concrete <sup>3</sup> Floor L <sub>n,0</sub> (dB)	
100	61.3	62.5	1.2
125	63.5	66.5	3.0
160	62.4	65.1	2.7
200	63.6	67.2	3.6
250	64.5	68.0	3.5
315	61.6	67.3	5.7
400	64.0	72.4	8.4
500	57.3	70.6	13.3
630	52.0	74.2	22.2
800	40.6	73.7	33.1
1000	38.3	73.1	34.8
1250	35.1	74.8	39.7
1600	30.0	75.8	45.8
2000	26.4	77.1	50.7
2500	21.2	76.3	55.1
3150	15.1	75.0	59.9
4000	13.4	76.3	62.9
5000	≤ 7.6	72.4	≥ 64.8



**Performance Index Numbers** (laboratory method)

L<sub>n,w</sub> (C<sub>i</sub>) = 57 (0) dB ie L<sub>n,w</sub> = 57 dB  
IIC<sup>5</sup> = 53 dB  
ΔL<sub>w</sub> = 19 dB  
ΔL<sub>lin</sub> = 9 dB

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:	8 May 2019	8 May 2019
On top of floor:	15 °C, 61 % R.H.	15 °C, 68 % R.H.
Chamber underneath floor:	15 °C, 66 % R.H.	15 °C, 66 % R.H.
Atmospheric pressure:	1002 mBar	1000 mBar

**Notes, Deviations etc**

1. ≤ and ≥ signify results, if any, where measurement was limited by proximity to background level.
2. L<sub>n</sub> = dB re 20 μPa, ΔL = dB re bare floor.
3. Bare slab indices: L<sub>n,w</sub> (C<sub>i</sub>) = 82 (-12) dB, IIC = 25.
4. L<sub>n</sub> results represent noise levels; i.e. lower = quieter. For ΔL and IIC results, higher = quieter.
5. IIC is defined in ASTM E989-89; laboratory requirements for which may differ from those of AS ISO 140.6.
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.
9. The integrity of the adhesive bond was verified when this flooring material was subsequently peeled off after testing.

**Issuing Authority**

Signed: David Truett  
Date: 16 July 2019

**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: July 2018 (NATA cal)  
• Analyser: July 2018 (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 m<sup>3</sup> vol, 212 m<sup>2</sup> surface area (approx.)  
• receiving room (lower): 105 m<sup>3</sup> vol, 135 m<sup>2</sup> surface area (approx.).  
Diffusers: • 200 m<sup>3</sup> room: 20 diffusers (approx 40 m<sup>2</sup>) • 100 m<sup>3</sup> 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.

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