CSIRO ACOUSTIC MEASUREMENT REPORT

Commonwealth Scientific and Industrial Research Organisation, Infrastructure Technologies
Acoustics Testing Laboratory, Research Way, Clayton, Vic 3168 Australia

Report No:
AC422-01-1

Client: Hainey Investments Pty Ltd, trading as Inspired Floorcoverings
Suite 3, Level 1, 72 Terrigal Esplanade, Terrigal, NSW 2260

Measurement Type: Sound Absorption

AS ISO 354–2006 [R2016]: *Acoustics–Measurement of sound absorption in a reverberation room*
AS ISO 11654–2002 [R2016] (ISO 11654:1997): *Acoustics–Rating of sound absorption–Materials and systems*

Test Specimen

[Specimen area[5]: 4.003 x 3.006 m (12.033 m²)]

Description: • Inspired Floorcoverings 'Aura Cushion Back' carpet tiles
• tested in a Type A installation (i.e. laid directly on the floor)

Material Details[3]:

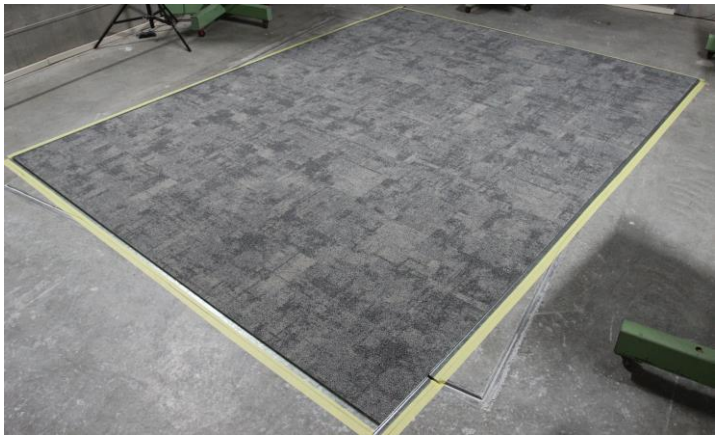
- Name: Inspired Floorcoverings 'Aura Cushion Back'.
- Composition: Multi level loop pile carpet (solution dyed nylon), on 'Cushion Back' backing, 3-4.5 mm pile height, 520 gsm pile weight, 1/12 gauge.
- Tile size: 500 x 500 mm; overall thickness 9.5 mm
- Weight (meas): 3.94 kg/m²

Installation:

- The test specimen was installed directly (no adhesive or underlay) on the concrete floor of the chamber in a 6 x 8 array of tiles.
- The test specimen was laid at an angle of 9° to the walls of the chamber (not parallel, as per AS ISO 354 Cl 6.2.1.2).
- The perimeter of the specimen was covered with a skirt of 1 mm thick folded steel angle, 15 mm high. Gaps between the specimen and the skirting members were minimised. The junctions between the skirting members and the chamber floor were sealed with tape.
- Specimen installation was carried out by laboratory staff.



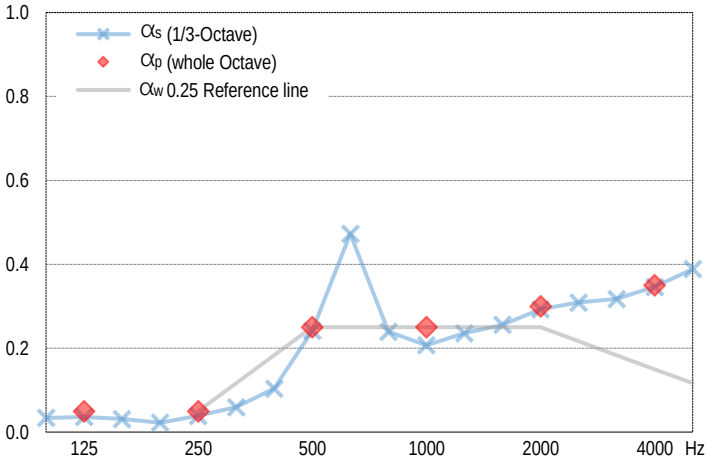
Closeup view of test specimen showing pile and backing



Test specimen installed in laboratory for test.

Measurement Details & Results

Freq	Absorption coefficients			Reverberation times, T_{60} (sec)	
Hz	α_s	α_p	95% Conf (δ)	Empty room[4]	with Specimen
100	0.03		0.05	5.55	5.18
125	0.04	0.05	0.05	5.82	5.40
160	0.03		0.03	6.10	5.70
200	0.02		0.03	5.17	4.96
250	0.04	0.05	0.03	4.58	4.29
315	0.06		0.02	5.41	4.83
400	0.10		0.02	5.36	4.44
500	0.24	0.25	0.03	4.95	3.43
630	0.47		0.04	4.46	2.50
800	0.24		0.02	4.27	3.09
1000	0.21	0.25	0.03	4.17	3.15
1250	0.24		0.02	3.91	2.91
1600	0.26		0.02	3.53	2.64
2000	0.29	0.30	0.03	3.27	2.41
2500	0.31		0.02	2.96	2.21
3150	0.32		0.02	2.73	2.07
4000	0.35	0.35	0.03	2.31	1.78
5000	0.39		0.03	1.97	1.54



Performance Indices[1,2]

α_w = 0.25
SAA = 0.21
NRC = 0.20
Absorption Class = E

The required 12 spatially independent decay curves came from ensemble averaging 10 successive decays with each of 3 different source loudspeaker positions, all sampled by 4 fixed microphones, using linear averaging.

Measurement Conditions	Empty room	with Test Specimen
Date of measurement:	11 Feb 2026	11 Feb 2026
Temperature & humidity:	23 °C, 60 % R.H.	23 °C, 61 % R.H.
Atmospheric pressure:	992 mbar	993 mbar

Notes, Deviations etc

1. Shape indicators (L, M, and H), if any, following the α_w index, indicate α_p values above the reference contour by ≥ 0.25 in the Low, Medium or High frequency ranges respectively; it is strongly recommended to use this single number rating in combination with the complete sound absorption coefficient curve.
2. SAA and NRC are defined in ASTM C423; laboratory requirements for which differ from AS ISO 354.
3. Material details stated are as per client advice; unless identified as (meas), indicating measured by CSIRO.
4. Empty room absorption in the 250, 630 & 800 Hz bands did not meet all AS ISO 354 requirements; a non-compliance unrelated to the product/material under test.
5. Specimen area used in calculations (12.033 m²) was the area inside the steel angle enclosing the specimen.

Issuing Authority

Signed: .....
David Truett
Date: 17 March 2026

Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-A-042
Microphones/preamps: • 4 x GRAS 46AQ microphone/preamps sets, in fixed positions as per AS ISO 354
Noise source: • Room populated with three Norsonic NOR276 dodecahedron loudspeakers, driven in turn by a Norsonic NOR280 power amplifier.
Calibration: • Analyser: February 2025 (DANAK cal, ilac-MRA recognised)

Laboratory Construction

Reverb room: • 300 mm thick concrete (closed off from the adjoining room by an MDF wall) • parallelepiped with dimensional proportions 1:1.3:1.6 for distribution of room modes • approx 202 m³ total room volume • approx 215 m² surface area excluding diffusers
Diffusers: • 20 stationary diffusers, approx 40 m² total surface area
Absorption area: • in accordance with AS ISO 354, unless noted otherwise[4]

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