



CSIRO ACOUSTIC MEASUREMENT REPORT

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

Report No:
AC426-01-1

Client: CSR Building Products Ltd.
Trinity 3, 39 Delhi Road, North Ryde, NSW 2113 Australia

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 area³: 3.9 x 2.81 m (10.959 m²)]

Description:

- Woven Image Acoustic Panel: Mura Curtain with Zeta backing
- Installed directly on floor surface

Manufacturer:

Woven Image, 37-39 Chard Road, Brookvale, NSW 2100

Test Specimen Details³:

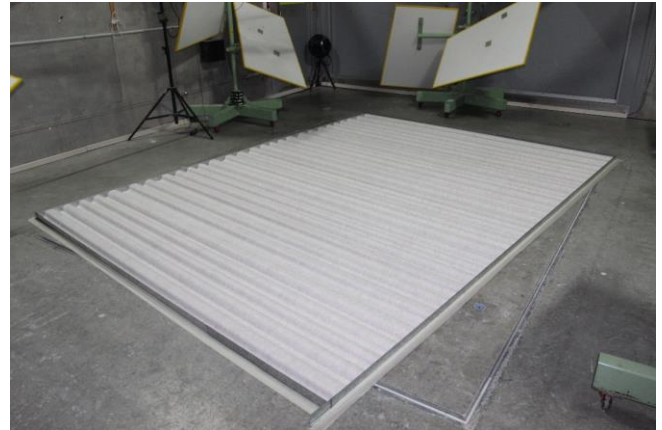
- Composition: 100% PET (51% post-consumer recycled)
- Nominal dimensions: 975 x 2800 x 45 mm, thickness 9 mm ± 7 %
- Area density: 2175 gsm

Installation [Type A installation as per AS ISO 354]:

- The test specimen was installed directly on the concrete floor of the chamber in an array of 4 panels butted up against each other to minimise gaps.
- The test specimen was laid at an angle of 8° 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, 50 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.



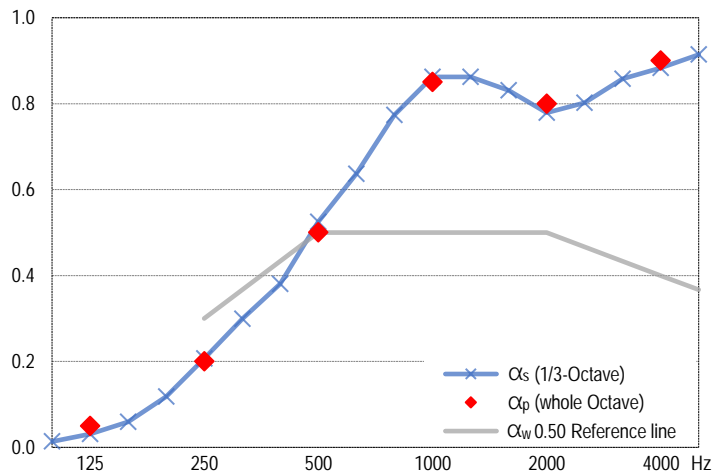
Detailed view of test specimen.



Test specimen installed in laboratory

Measurement Details & Results

Freq Hz	Absorption coefficients			Reverberation times, T ₆₀ (sec)	
	α_s	α_p	95% Conf (δ)	Empty room ⁴	with Specimen
100	0.01		0.06	4.72	4.62
125	0.03	0.05	0.05	5.29	5.02
160	0.06		0.04	5.21	4.72
200	0.12		0.04	4.85	4.07
250	0.21	0.20	0.05	4.55	3.46
315	0.30		0.04	5.06	3.35
400	0.38		0.06	5.19	3.12
500	0.52	0.50	0.05	4.84	2.61
630	0.64		0.06	4.39	2.26
800	0.77		0.05	4.17	2.00
1000	0.86	0.85	0.04	4.00	1.85
1250	0.86		0.06	3.84	1.82
1600	0.83		0.04	3.51	1.77
2000	0.78	0.80	0.05	3.22	1.75
2500	0.80		0.04	2.87	1.62
3150	0.86		0.04	2.60	1.49
4000	0.88	0.90	0.04	2.13	1.31
5000	0.91		0.05	1.77	1.16



Performance Indices^{1,2}

α_w = 0.50 (MH)

SAA = 0.59

NRC = 0.60

Sound Absorption Class = D

The required 12 spatially independent decay curves came from ensemble averaging 10 successive decay curves 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:	30 Apr 2026	30 Apr 2026
Temperature & humidity:	21 °C, 50 % R.H.	21 °C, 53 % R.H.
Atmospheric pressure:	1013 mbar	1013 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 100, 250, 630, 800 & 1000 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 (10.959 m²) was the area inside the steel angle enclosing the specimen.

Issuing Authority

Signed:
Date: 4 May 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 otherwise⁴