



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:
TL582-03-1

Client: EasyCraft Australia Pty Ltd
140 North Road, Wynnum West, Queensland 4178

Measurement Type: Airborne Sound Insulation
AS 1191-2002 "Acoustics – Method for laboratory measurement of airborne sound insulation of building elements"
AS/NZS 1276.1:1999 (ISO 717-1:1996) "Acoustics – Rating of sound insulation in buildings and of building elements. Part 1: Airborne Sound Insulation"

Test Specimen [Specimen area: 3.60 m (w) x 3.0 m (h) = 10.8 m²]

Description: 64 mm steel stud wall, with 75 mm 11 kg/m³ glass wool batts in the cavity, clad with EasyCraft EasyVJ 9 mm MDF panels on one side, and CSR 10 mm Gyprock PLUS plasterboard on the other.

- Materials:**
- a) EasyCraft EasyVJ 9 mm MDF pre-primed wallboard, sheet size 1200 x 3000 mm, 6.7 kg/m², with 3 mm deep V grooves at 100 mm spacing across the 1200 mm width of the board
 - b) CSR 10 mm Gyprock PLUS RE plasterboard, 1200 mm width, 5.7 kg/m²
 - c) Rondo 64 mm steel studs and track (0.5 mm BMT)
 - d) Fletchers Pink Partition glass wool batts, 75 mm thick (uncompressed), 11 kg/m³, R 1.8, 600 x 1200 mm batt size
 - e) Fuller Firesound caulking compound

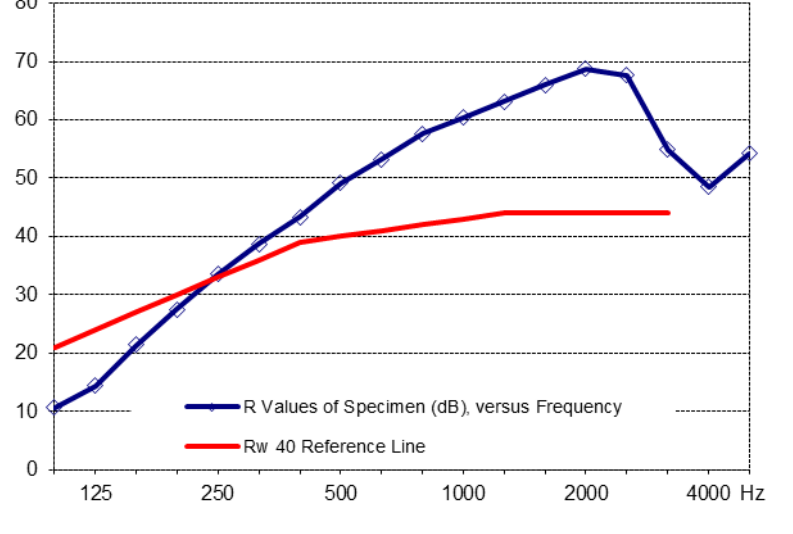
- Installation:**
- Top and bottom steel tracks were bolted to the test aperture of the laboratory, and studs friction fitted at 600 mm nominal centres (item c).
 - EasyCraft wall panelling (item a) was screw fixed to one side of the stud frame.
 - Glass wool batts (item d) were installed between the studs of the frame.
 - Plasterboard (item b) was screw fixed to the other side of the stud frame.
 - Wall panelling and plasterboard sheets were hung vertically.
 - The mating profile of the long edges of the Easycraft panelling was relied upon to acoustically seal the joints between adjacent panels; no other materials or joint sealing processes were applied at those joints.
 - Plasterboard joints were taped and set with standard jointing materials, and the perimeter of the whole wall was caulked (item e) on both sides for acoustic integrity.
 - All installation was carried out by the client.



Test specimen installed in laboratory

Measurement Details & Results

Freq (Hz)	Specimen R Value (dB)		Repeatability δ (dB)
	1/3 Octave	Whole Octave	
100	10.7		1.3
125	14.4	13.7	1.1
160	21.4		1.2
200	27.5		0.7
250	33.5	31.0	0.5
315	38.7		0.2
400	43.3		0.2
500	49.2	46.7	0.2
630	53.2		0.3
800	57.6		0.3
1000	60.4	59.8	0.2
1250	63.1		0.2
1600	66.0		0.2
2000	68.8	67.4	0.2
2500	67.7		0.2
3150	54.9		0.3
4000	48.5	51.5	0.2
5000	54.2		0.2



Performance Index Numbers R _w (C; C _{tr}) = 40 (-4; -11) dB STC = 38	Repeatability Estimates (AS 1191, App B, 95 % Confidence) Measurement was carried out in both directions through the test specimen, using 3 loudspeaker positions in each chamber; giving 6 spatially independent sets of R values, from which average R values and repeatability estimates have been calculated (repeatability estimates rounded up to 1 decimal place).	Measurement Conditions Date of measurement: 10 February 2016 200 m ³ chamber (north): 23 °C, 60 % R.H. 100 m ³ chamber (south): 24 °C, 54 % R.H. Atmospheric pressure: 1003 mBar
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Notes, Deviations etc

- Physical characteristics of materials may be suppliers' nominal figures; not necessarily verified by CSIRO.
- ≥ indicates R values, if any, where measurability was limited by proximity to background level.

Issuing Authority

Signed: David Truett
Date: 16 September 2016

Instrumentation

Real time analyser: • Brüel & Kjær PULSE LAN-XI type 3160-A-4/2

Microphones/preamps: • Brüel & Kjær type 4166 microphones on type 2669 preamps, rotating simultaneously in both rooms with 33 sec period (1.65 m radius in 200 m³ room, 1.32 m radius in 100 m³ room).

Noise source: • Rola 12UX on flat 1m² baffle (up to 1.8 KHz)
• Brüel & Kjær type HP 1000 dodecahedron (from 1.8 KHz)

Calibration: • Brüel & Kjær type 4228 Pistophone: Feb 2016 (NATA cal)
• Analyser: Feb 2016 (NATA cal)

Laboratory Construction

Chambers: • 300 mm thick concrete • parallelepiped with dimensional proportions 1:1.3:1.6 for spectral distribution and overlap of room modes • northern room approx. 200 m³ vol (212 m² area); southern room 100 m³ vol (133 m² area).

Diffusers: • none.

Isolation: • ≥ R_w 75; structurally separate (50 mm air gap), vibration isolated (11 Hz).

Specimen: • 3.60 m wide x 3.00 m high, each chamber having 25 mm thick steel plate aperture: lining its 300 mm deep portion of the test aperture, creating a total aperture depth of 650 mm, rubber gasket sealing the 50 mm air gap.