



# Acoustic Ratings

Darley Aluminium Systems

A comprehensive guide to Darley Aluminium's Acoustic Ratings



# What are Rw

*With increased population density and further development of high-rise buildings, acoustic qualities in windows and doors are becoming far more important. This brochure is a summary of all Darley Aluminium's system acoustic performances.*

For further information including test reports, please contact your nearest Darley Aluminium Office.

*Sound* is created when vibration of a surface is transferred into a medium such as air. This vibration causes air molecules to move, which is then interpreted by our ear drums. As such, sound can be defined as a longitudinal pressure wave caused by this vibration. The ear drums vibrate which is then interpreted by the brain as the sensation we hear.

*Noise* is unwanted sound. It can be caused by many things and can be unwanted for many reasons. Two examples of unwanted noise includes loud music during an inappropriate time (eg. sleep) and unpleasant sounds above safe decibel numbers (eg. construction work).



# Ratings?

## Acoustic Ratings Explained

*Glass* properties and aluminium system designs can help reduce noise where needed. Sound is heard at different frequencies, and so standard calculation of sound needs to take this into consideration. To do this, *AS/NZS ISO 717.1:2004* sets out parameters for the Weighted Sound Reduction Index  $R_w$ .

Sound reduction performance of an aluminium system is measured in  $R_w$ . The process of determining this figure also produces two additional parameters  $C$  and  $C_{tr}$ . These adaptation terms are used to modify the  $R_w$  number to better represent the sound reduction of glass for different types of noise.

The “ $C$ ” adaptation term is relevant to the following noise types:

1. Living activities (talking, music, radio, TV)
2. Children playing
3. Railway traffic at medium and high speed
4. Highway traffic with speeds  $>80\text{km/hr}$
5. Jet aircraft at short distance
6. Factories emitting mainly medium and high frequency noise.

The “ $C_{tr}$ ” adaptation term is relevant to the following noise types:

1. Urban road traffic
2. Railway traffic at low speeds
3. Aircraft which are propeller driven
4. Jet aircraft which are a large distance away
5. Disco music.

The following table summarises Darley Aluminium’s acoustic ratings in  $R_w$ .

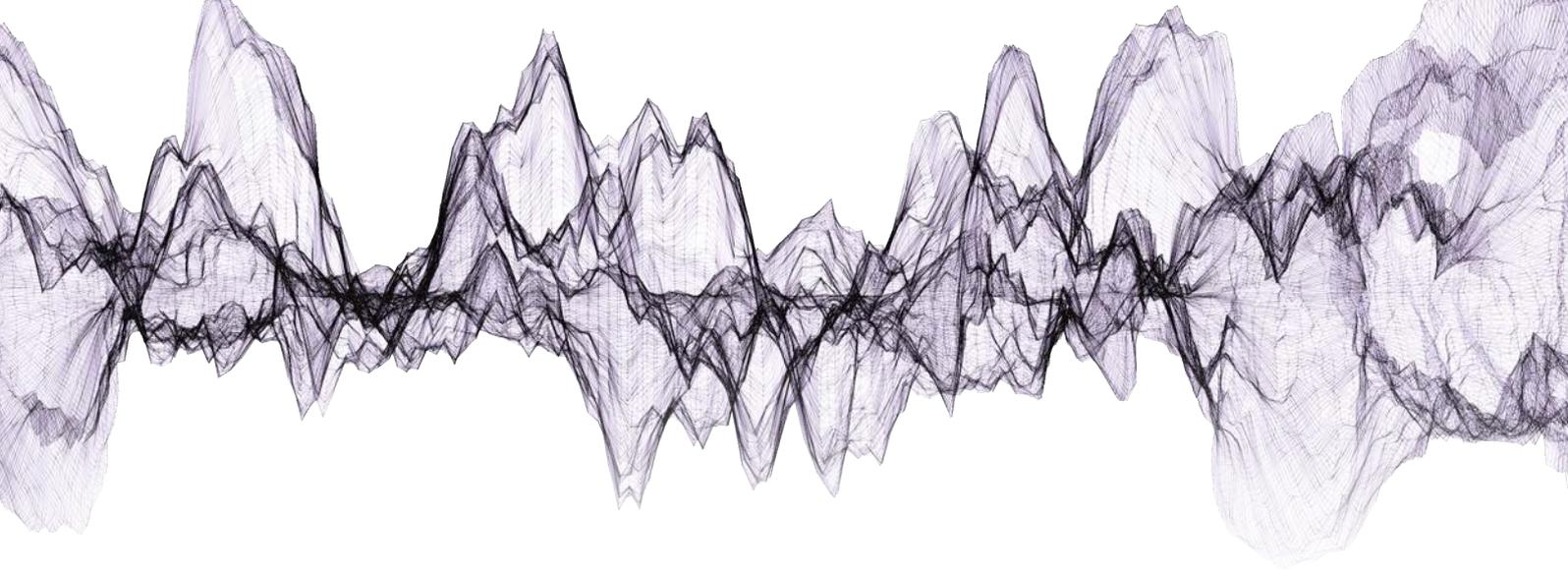
*For further information such as  $C$  and  $C_{tr}$  values, please contact your nearest Darley Aluminium office for a copy of our test reports or technical manuals.*

# A Guide

## Darley Aluminium's Window & Door Systems and their Rw Ratings

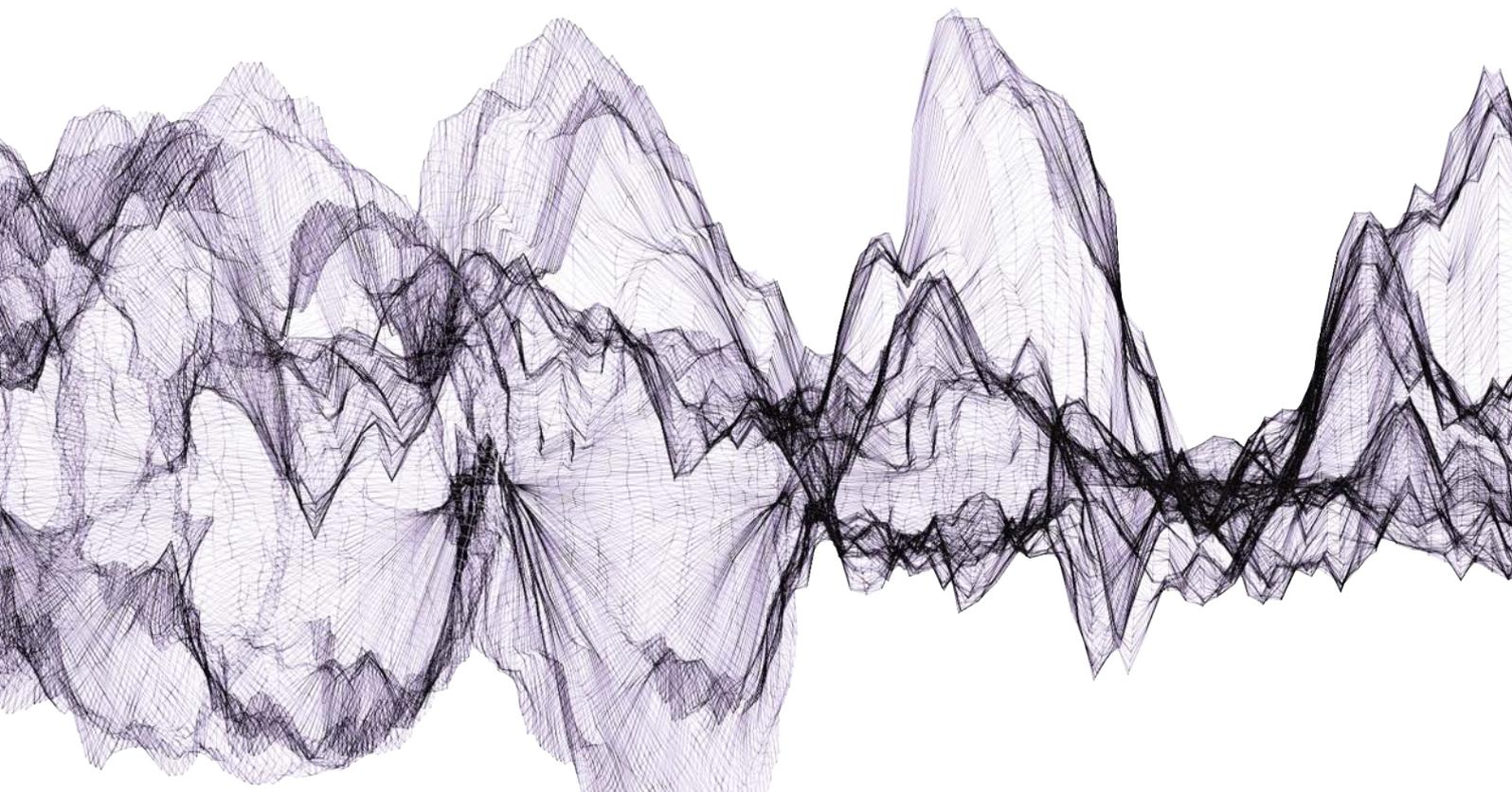
Darley's expansive range of window and door systems and their Rw ratings can be found below. Tested Darley systems can be issued with test reports.

SYSTEM	GLASS TYPE	RW RATING	TEST NO.
<b>KLASSICVIEW</b>			
53mm KlassicView		N/A	
76mm Sliding Window	10.5 hush	36	TL666-03-1
76mm Sliding Window	4/8/8.5 hush	37	TL666-04-1
76mm Awning	10.5 hush	34	TL666-07-1
76mm Awning	4/8/8.5 hush	33	TL666-08-1
76mm Fixed Frame	10.38	32	Estimate based on TL666-07-1
76mm Fixed Frame	10.5 hush	34	TL666-07-1
76mm Fixed Frame	4/8/8.5 hush	33	TL666-08-1
76mm Double Hung	10.5 hush	35	Estimate based on TL666-03-1
76mm Double Hung	4/8/8.5 hush	35	Estimate based on TL666-04-1
76mm French Door	12.5 hush	33	Estimate based on DARWRHDA001
101.6mm Sliding Door	10.5 hush	37	TL666-02-1
101.6mm Sliding Door	4/8/8.5 hush	37	TL666-01-1
<b>45MM DOOR</b>			
45mm Hinged Door	12.5 hush	32	Estimate based on DARWRHDA001
45mm Sliding Door		N/A	
45mm Water Rated Hinged Door	12.5 hush	34	DARWRHDA001
<b>COMMERCIAL FRAMING</b>			
100 x 50 mm Front Single Glazed	10.38	36	Estimate based on 4858-1
100 x 50 mm Front Single Glazed	10.5 hush	38	Estimate based on 4858-2
100 x 50 mm Front Double Glazed	8/10/10.5 hush	41	TL666-09-1
150 x 50 mm Front Single Glazed	10.38	36	Estimate based on 4858-1
150 x 50 mm Front Single Glazed	10.5 hush	38	Estimate based on 4858-2
150 x 50 mm Front Double Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
101.6 x 45 mm Centre Single Glazed	10.38	36	4858-1
101.6 x 45 mm Centre Single Glazed	10.5 hush	38	4858-2
101.6 x 50 mm Centre Double Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
101.6 x 50 Centre (50mm Pocket)	8/10/10.5 hush	41	Estimate based on TL666-09-1
101.6 x 50 Centre (50mm Pocket)	8.5 hush /16/12.5 hush	44	Estimate (glass spec of RW47)
150 x 45 mm Centre Single Glazed	10.38	36	Estimate based on 4858-1



SYSTEM	GLASS TYPE	RW RATING	TEST NO.
<b>COMMERCIAL FRAMING</b>			
150 x 45 mm Centre Single Glazed	10.5 hush	38	Estimate based on 4858-2
150 x 50 mm Centre Double Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
103 x 50 mm Capped Front Glaze Framing		N/A	
150 x 50mm Capped Front Glaze Framing		N/A	
<b>CITYVIEW</b>			
Sliding Window	10.38	33	4388-2
Sliding Window	4/7.5/4	30	4388-1
Sliding Window (Double System)	10.38	42	4388-3
Double Hung	4/8/8.5 hush	35	Estimate based on TL666-04-1
35mm Awning Window	10.38	36	4858-1
35mm Awning Window	10.5 hush	38	4858-2
50mm Heavy Duty Awning + Casement Window	8/10/10.5 hush	41	TL666-09-1
Truth Awning + Casement Window	8/10/10.5 hush	40	Estimate based on TL666-09-1
Patio Door	6.38	32	Estimate based on 4258-1 and 4858-3
Patio Door	10.38	34	4858-3
Patio Door	6.5 hush	35	Estimate based on 4258-1 and 4858-3
Patio Door	10.5 hush	37	4858-4
Patio Door (Double System)	10.38	41	4388-3
Patio Door (Double System)	10.5 hush	43	Estimate based on 4858-3, 4858-4 and 4388-3
Apartment Door	6.38	33	4258-1
Apartment Door	10.38	35	4258-2
Apartment Door	6.5 hush	36	Estimate based on 4258-1
Apartment Door	10.5 hush	38	Estimate based on 4858-3
Apartment Door	6/12/6.38	34	4258-3
Apartment Door (Double System)	10.38	42	Estimate based on 4388-3
Apartment Door (Double System)	10.5 hush	44	Estimate based on 4388-3

SYSTEM	GLASS TYPE	RW RATING	TEST NO.
<b>HARBOURVIEW</b>			
Top Rolling Multi-Fold Door	12.5 hush	33	Estimate based on DARWRHDA001
Bottom Rolling Multi-Fold Door	12.5 hush	33	Estimate based on DARWRHDA001
<b>CLIMATEGUARD</b>			
100mm Centre Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
150mm Centre Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
100mm Front Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
150mm Front Glazed	8/10/10.5 hush	41	Estimate based on TL666-09-1
50mm Hinged Door	12.5 hush	33	Estimate (glass spec of RW40)
50mm Hinged Door	8/10/10.5 hush	36	Estimate based on TL666-09-1 and glass spec of RW43
Sliding Window	6/12/6.38	34	Estimate based on 4258-3
Chainwinder Awning	8/10/10.5 hush	41	Estimate based on TL666-09-1
Roto Awning + Casement	8/10/10.5 hush	41	Estimate based on TL666-09-1
Apartment Door	6/12/6.38	34	Estimate based on 4258-3
<b>ADDITIONAL SYSTEMS</b>			
Jockey Sash (with 100 FG single)	10.38 & 6.38	44	14-160/PD
Jockey Sash (with 100 FG single)	12.76 & 6.38	45	14-161/JW
Jockey Sash (with 150 FG single)	10.38 & 6.38	45	14-168/PD
Jockey Sash (with 150 FG single)	12.76 & 6.38	46	14-167/PD



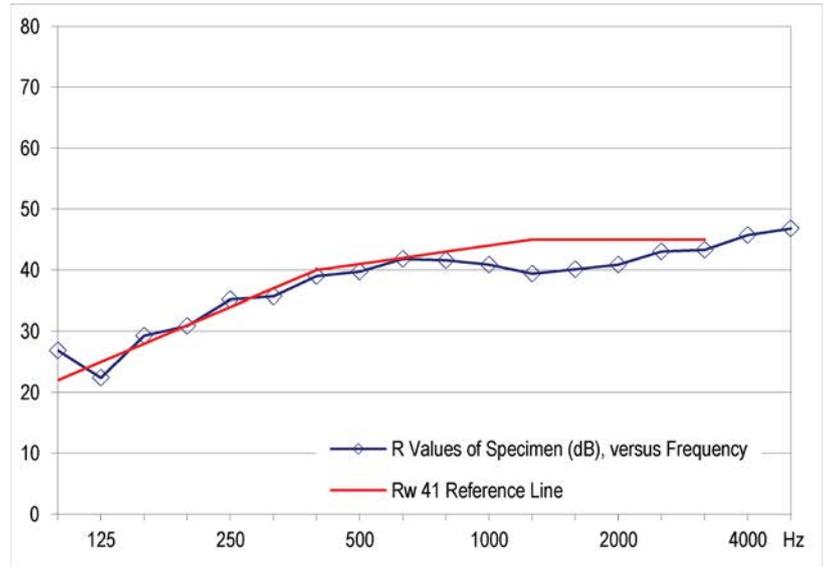
# Further Data

## Darley Aluminium's Window & Door Systems and their Rw Ratings

Darley may be able to provide our customers with acoustic test reports when required. All acoustic reports will include additional information such as images and details of the tested window, as well as tables and graphs providing further measurements such as frequency and dB, Rw(C; Ctr) and STC.

### Measurement Details & Results

Freq (Hz)	Specimen R Value <sup>2</sup> (dB)		95 % Conf $\delta$ (dB)
	1/3 Octave	Whole Octave	
100	26.9		1.1
125	22.4	25.3	1.3
160	29.3		1.1
200	30.9		1.1
250	35.2	33.4	1.1
315	35.7		0.5
400	39.0		0.7
500	39.7	40.0	0.4
630	41.8		0.2
800	41.6		0.2
1000	40.9	40.5	0.2
1250	39.4		0.2
1600	40.1		0.1
2000	40.9	41.2	0.2
2500	43.0		0.2
3150	43.3		0.2
4000	45.7	45.0	0.3
5000	46.8		0.2



### Performance Index Numbers

R<sub>w</sub> (C; C<sub>tr</sub>) = 41 (-2; -4) dB  
STC = 41

### Confidence Intervals (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 confidence intervals have been calculated (confidence intervals rounded up to 1 decimal place).

### Measurement Conditions

Date of measurement: 27 September 2018  
200 m<sup>3</sup> chamber (north): 14 °C, 49 % R.H.  
100 m<sup>3</sup> chamber (south): 14 °C, 55 % R.H.  
Atmospheric pressure: 1003 mBar



# To find out more

Darley Aluminium's sales and technical support teams will be more than happy to help with inquiries and confirmations regarding Rw ratings over the phone or through email.

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