

# SOUND SOLUTIONS

WINDOW AND DOOR SYSTEMS DELIVERING IMPROVED SOUND REDUCTION



**ACOUSTICS**  
PERFORMANCE TESTED

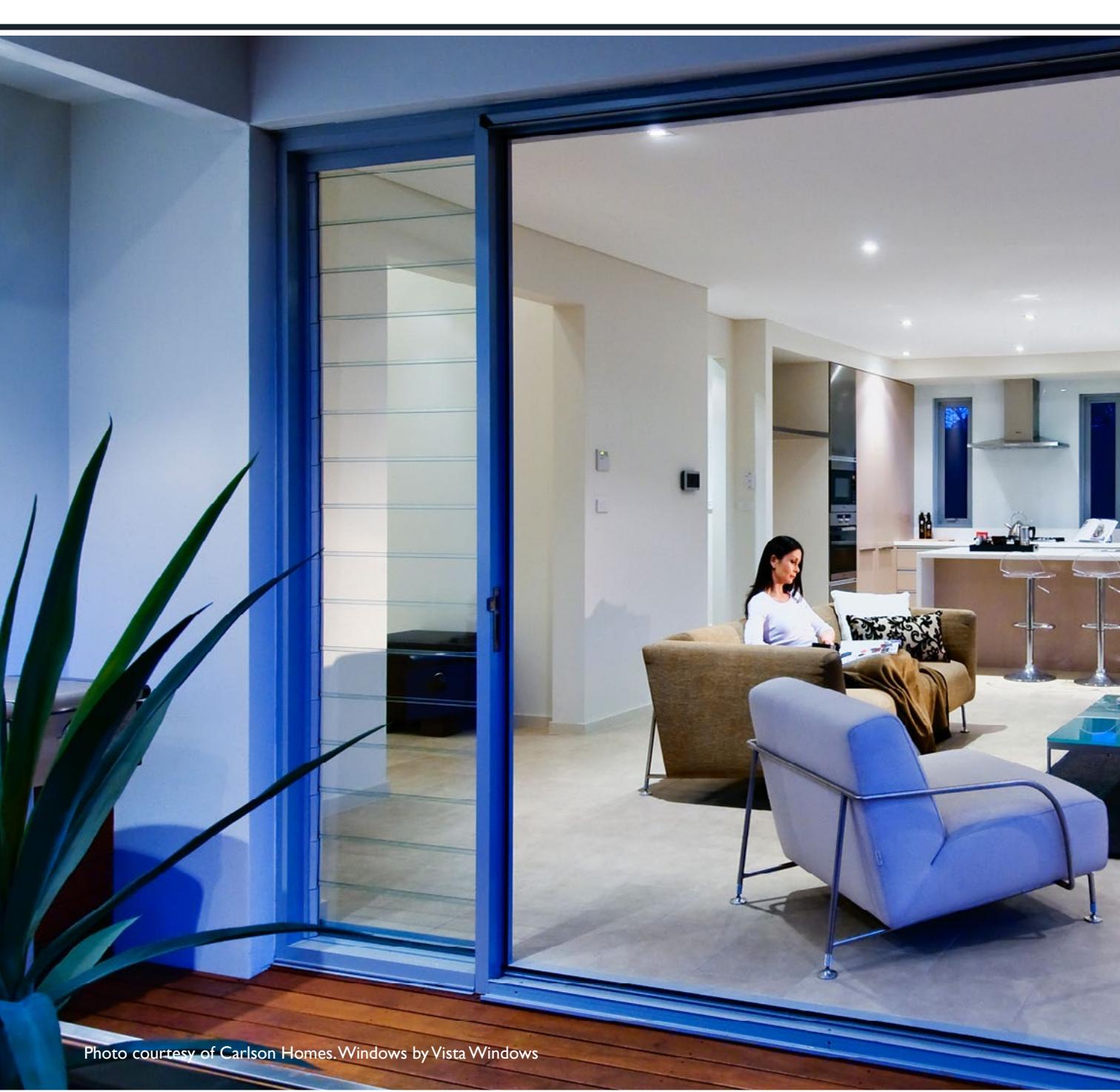


Photo courtesy of Carlson Homes. Windows by Vista Windows



## YOUR HOME IS YOUR SANCTUARY

Architectural Window Systems is committed to offering architects, designers, builders and homeowners window and door solutions which provide light and ventilation and help to create unique living spaces protected from harsh environmental elements.

Unwanted or harmful sounds have increasingly become part of our suburban landscape causing annoyance and disturbance to our lifestyle.

Through considered innovation, AWS offers a dedicated range of windows and doors from the Elevate™, Vantage and ThermalHEART™ range, designed to assist architects and designers, builders and homeowners to insulate the building envelope from unwanted noise.

These systems are tested by the National Acoustic Laboratories to ensure the highest level of assurance in their performance integrity.

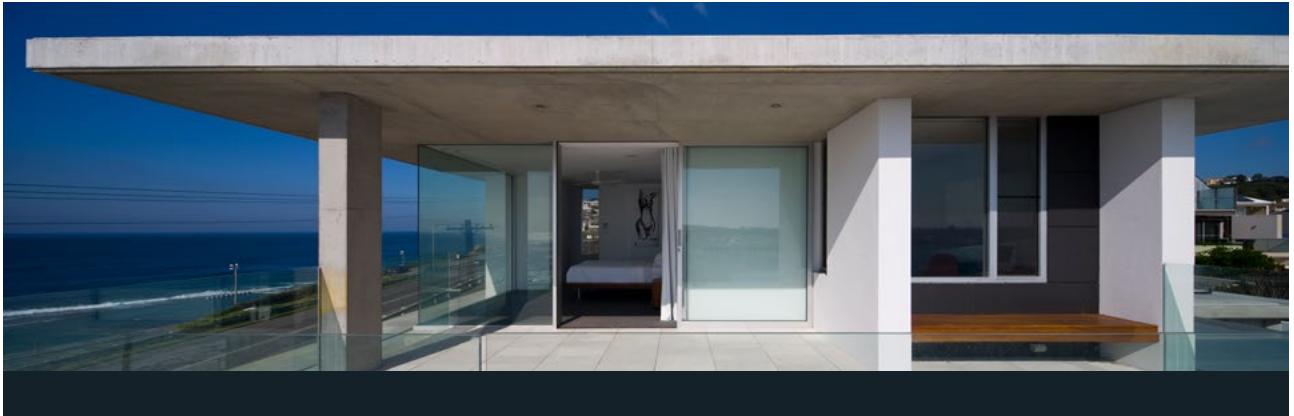
Creating beautiful, livable environments which meet contemporary aspirations for efficiency and comfort.



**ACOUSTICS**  
PERFORMANCE TESTED

# FIND WHAT YOU'RE LOOKING FOR

Need help selecting your windows and doors?  
Your local Vantage fabricator can offer expert advice and assistance. Visit our website [vantagealuminium.com.au](http://vantagealuminium.com.au) to locate a showroom near you.



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## ONLINE TOOLS

Interested in finding out more about AWS windows and doors and their acoustic performance? We offer a number of electronic resources to assist you with product selection for applications where noise reduction is a priority.

For information about residential product solutions visit [www.vantagealuminium.com.au/sound](http://www.vantagealuminium.com.au/sound)

For information about commercial product solutions visit [www.elevatealuminium.com.au/sound](http://www.elevatealuminium.com.au/sound)

For detailed specification resources visit [www.specifyaws.com.au](http://www.specifyaws.com.au)



See AWS window and door systems being tested for acoustic performance at the National Acoustic Laboratories' testing facility. Watch the video on the Vantage or Elevate™ website.



Hunters Hill Project - Windows by MidCity Windows



# UNDERSTANDING SOUND & NOISE POLLUTION

Modern day lifestyle and the proximity of our homes and offices to roads, airports and industry has placed an increased level of importance on the ability to control external sounds in our homes.

There is a significant body of evidence supporting the notion that noise pollution can have detrimental impacts on our individual health and wellbeing. The inevitable build-up of stress and lack of sleep caused by noise pollution has been linked to a host of physical and mental health issues.

How can we protect ourselves from noise pollution? City planners and architects are coming up with ways to buffer traffic noise at the source by constructing noise barriers, limiting vehicle speeds, altering roadway surfaces and using different traffic controls that promote a smoother flow of traffic. These methods are fantastic in new developments, but what about noise from airports, construction or even just a loud neighbour?

Windows and doors are among the many building products that can significantly impact the way your home or building envelope is insulated from external sounds.

In order to make the correct product selections for noise reduction, it is important to first understand what sound is?

### Sound Levels

Sound levels are expressed in decibels (dB). The higher the dB rating, the stronger the sound source. The sound of a whistling bird (50dB) for example, is stronger than the sound of a falling leaf (10dB).

Sound can occur as a single frequency (e.g. musical notes) or can be made up of various frequencies (e.g. traffic noise).

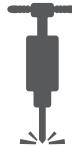
A frequency is expressed in hertz (Hz) and determines the “pitch” of a sound source. Frequencies can be broken into three categories: low tones, mid tones and high tones. The frequency range of urban road traffic is concentrated around the low tones whereas a whistling kettle consists of high tones.

When we consider sound reduction and building materials, we refer to an Rw value. Rw values indicate how effective a product is at reducing decibels of sound transferred through the building material. Where there is 100dB of sound on the outside the Rw value measures the significance of the reduction in decibels inside.

100dB  
EQUATES TO



NEARBY AIRCRAFT  
TAKING OFF



JACKHAMMER  
2M AWAY



NEARBY HEAVY  
TRAFFIC/HORNS



# WINDOWS, DOORS & SOUND REDUCTION

By selecting windows or doors for your project which deliver good sound reduction, you will improve the comfort and “livability” of your home.

Airborne sound such as traffic or airport noise are major contributors to sound nuisance and can cause a range of physical and psychological concerns for residents.

There is also research to suggest that the resale value of homes which are well insulated against airborne sound is considerably higher than those which are not.

The ability for a window or door to provide good sound reduction is dependent upon a number of factors:

- Glass selection
- Quality of gaskets and seals
- Window style
- Correct installation

The following pages will review some of the common considerations in selecting windows and doors for sound reduction.

# Glass Selection

## Single Glazing

As a general statement, where single glazing is used the acoustic performance of glass improves as its thickness increases.

## Laminated Glass

Laminated glass typically will deliver better sound reduction properties than float or toughened glass. Laminated glass is made up of two glass panes which are joined together by a transparent elastic layer. In many instances, speciality laminated glass products exist which are designed to deliver improved sound reduction properties. An example of this is Viridian VLam Hush™ a laminated glass that uses a specially developed interlayer to dampen noise, providing enhanced sound reduction performance. This means that thinner and lighter glass can be used for equivalent acoustic performance.

## Thermal Double Glazing

Double glazing may be selected for a window or door where there is an objective to improve the thermal performance of the system or deliver high thermal insulation properties to a building. Whilst double glazed window and door systems perform well in terms of sound reduction, double glazing may not necessarily deliver better acoustic performance than single glazing - particularly when compared with specially laminated glass. In fact, as a general statement, standard double glazing is less noise reducing than single glazing with the same total glass thickness. Double glazing tends to perform better acoustically when the thickness of the individual glass panes is increased and the air gap between glass panes is expanded. Alternatively, where there is a desire to balance thermal and acoustic performance, double glazing incorporating a specialty acoustic glass such as Viridian VLam Hush™ may provide a good solution.

## Asymmetric Glazing

Asymmetric glazing is used to deliver improved acoustic performance. It involves combining two pieces of glass of differing thickness in a double glazing unit. These Asymmetric glazing units leads to a perceptible difference compared to standard double glazing with the same total glass thickness.

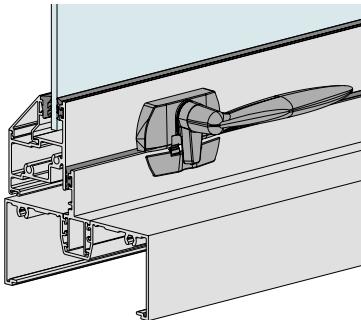
## Gaskets & Seals

Vantage, Elevate™ and ThermalHEART™ window and door systems are manufactured using high quality, controlled Santoprene seals.

There is a direct relationship between the ability of a window or door to offer sound reduction and its airtightness

To achieve good acoustic performance windows must close tightly with all gaps securely filled. If air can pass through the joints or openings in a window then so can sound.

Vantage, Elevate™ and ThermalHEART™ windows and doors are designed to minimise air infiltration which facilitates good sound reduction.



*Window sash must seal tightly against frame*

## Installation

Regardless of how a window is specified or constructed, if it is poorly installed it will not deliver its maximum sound reduction properties.

Vantage, Elevate™ and ThermalHEART™ windows and doors must always be installed by an licensed builder or installer in accordance with correct installation guidelines.

## Window Style

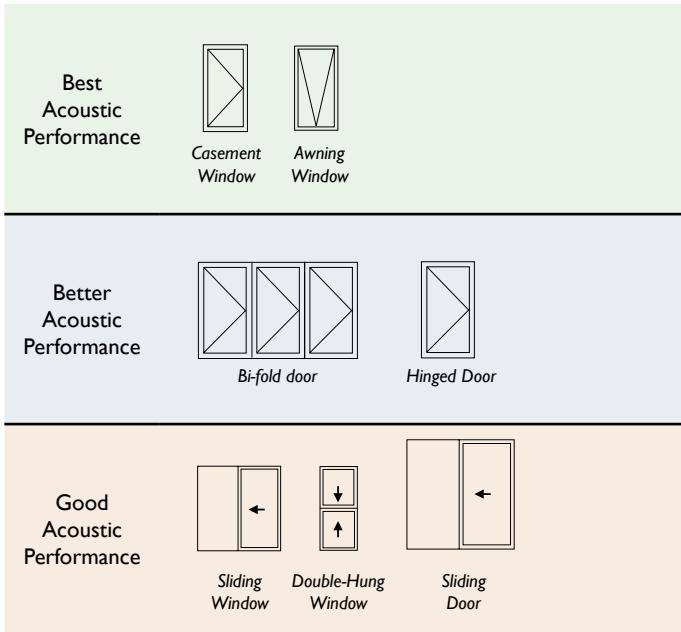
The design of a window or door will impact upon the ability of the system to deliver sound installation.

By design, some windows and door styles “seal” better than others. For example, a sliding window does not seal as well as an awning or casement window and therefore (all other factors remaining equal) a awning or casement window is likely to deliver better sound installation than a sliding window in the same installation.

The selection of window style must be balanced based on acoustic performance, lifestyle and usage factors.



### Comparison of acoustic performance by window style



# MEASURING ACOUSTIC PERFORMANCE IN WINDOWS & DOORS

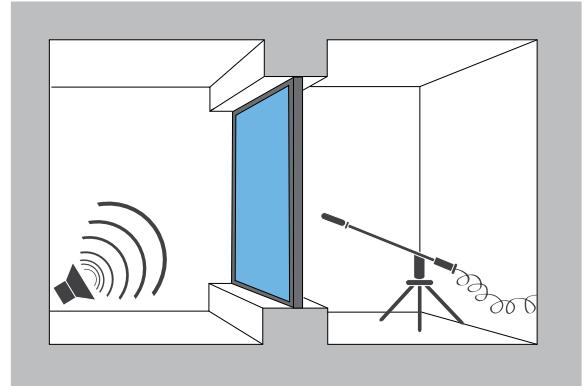
Whilst the individual elements of glass, seals and design have their own impact on window performance, it is essential to evaluate the ability of a window to insulate against sound in its entirety. To determine how effective a window or door is at reducing sound AWS undertakes rigorous acoustic testing of Vantage, Elevate™ and ThermalHEART™ systems.

This commitment to performance testing ensures a comprehensive product offering delivering improved sound reduction properties for residential and commercial applications.



Merriweather Residence - Window by AVS

*Vantage, Elevate™ and ThermalHEART™ windows and doors are tested for acoustic performance in an accredited testing laboratory. The test involves measurement of the airborne sound which passes through the window and expression of this sound as an Rw value.*



### Sound reduction and windows

Sound reduction is the screening of a room against a noise source. When it comes to windows and sound reduction, we are primarily concerned with airborne sound.

Airborne sound reduction is the reduction in decibels of sounds that pass through the air (e.g. traffic or aircraft noise). The ability of a window to offer airborne sound reduction is determined by the difference between the sound level environment in which the sound source is present and the sound level in the room screened by the window from the sound source.

### Measuring acoustic performance

Sound or acoustic performance of a window is measured by the **weighted sound reduction index** or **Rw value**. Rw values are determined by measuring the reduction in dB achieved where a window is used to insulate against a sound source. The Rw value will increase as the acoustic performance of a window improves, so that a window with an Rw value of 41 has a significantly improved acoustic performance over a window with an Rw value of 30. In fact it has reduced the airborne sound entering the room through the window by 11 decibels. For every increase in Rw value, sound transmission is reduced by 1 dB.

### Rw Correction Values

Rw values represent aggregated data showing the average performance of a window across a broad spectrum of sounds. To provide a more accurate description of a window's performance when subjected to a specific type of sound we use correction values - these values are shown in brackets beside the Rw value e.g. Rw41 (-1,1). The first value is the "C" value which represents mid and high tone noises e.g. people talking. The second value is the "C<sub>tr</sub>" value which represents sound dominated by low and mid tones e.g. road traffic noise. By applying these values to the defined Rw value you achieve a more reliable interpretation of a window's performance when subjected to specific noise sources.

$$80\text{dB} - R_{w41} = 39\text{dB}$$

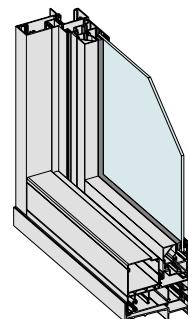
EXTERNAL NOISE      GLAZING UNIT      INTERNAL SOUND

# OUR PRODUCT SOLUTIONS

## Window & Door Systems

AWS have tested a large range of Vantage, Elevate™ and ThermalHEART™ systems for acoustic performance. In most cases products are tested with a number of glass options. A summary of the  $R_w$  values achieved by each product are provided on the following pages.

Full test reports are available for acoustics engineers and specifiers upon request. Contact the AWS technical team for more information.

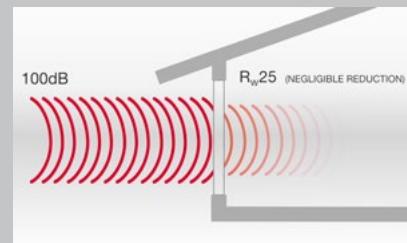


Series 466  
Awning window illustrated

### R<sub>w</sub> Values

The acoustic performance of a window or door system is measured as a  $R_w$  Value. The higher the value the better the system is at insulating against noise.

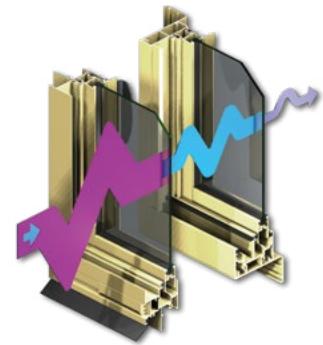
The following pages provide you with  $R_w$  values for a wide range of Vantage, Elevate™ and ThermalHEART™ systems.



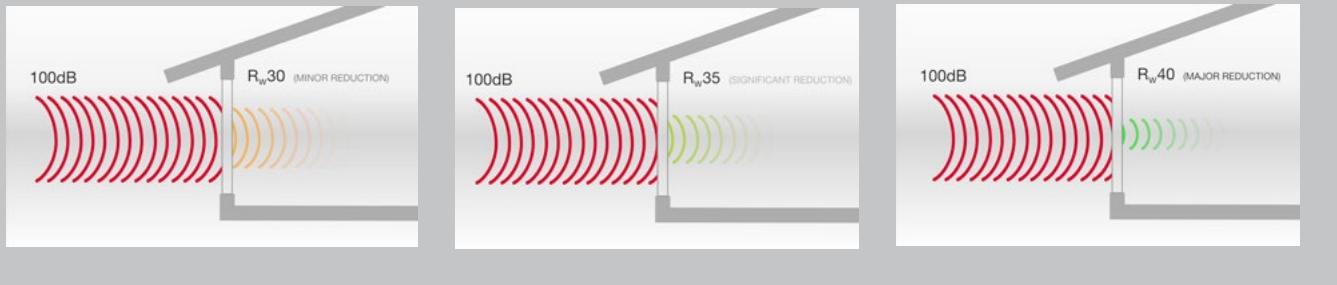
# SoundOUT™ Secondary Glazing Systems

For projects requiring significant reduction of airborne sound, AWS recommends SoundOUT™ Secondary Glazing. The SoundOUT™ range of secondary glazing windows and doors are purposefully designed to improve the acoustic performance of the building envelope. Tested in accordance with Australian Standards by the National Acoustic Laboratories in Chatswood, NSW.

The SoundOUT™ range can be used to dramatically reduce sound penetration into a building. Secondary glazing involves installing a second window inside the building in front of an existing window. An air gap of 75mm-100mm is used to achieve maximum sound reduction. Secondary glazing is an ideal tool for providing sound reduction into an existing building envelope. Secondary glazing systems can be retrofitted into existing buildings.



*SoundOUT™ Sliding window, Sliding door and Casement window configurations available*



# Residential Series Systems

## RESIDENTIAL SERIES

Australian designed systems for residential applications

The Vantage Residential Series offers a comprehensive suite of window and door systems designed for Australian conditions. The extensive range has been developed with a focus on creating compliant, economical systems to provide necessary performance characteristics and meet the functional requirements of Australian residential dwellings.

Residential Series systems offer high water resistance and low air infiltration, conform to all relevant Australian Standards and have been fully tested and WERS rated.



SYSTEM	GLASS	RW (C, C <sup>tr</sup> )
Series 504 Sliding Window	3mm Annealed glass	STC22
	6.38mm Laminated glass	32 (-1;2)
	7.52mm Laminated glass	31 (-1;-2)
Series 514 Double-Hung Window	5mm Annealed glass	28 (-2;3)
	6.38mm Laminated glass	29 (-3;-4)
	7.52mm Laminated glass	30 (-2;3)
Series 516 Awning Window	3mm Annealed glass	STC30
	6.38mm Laminated glass	34 (-1;-2)
	10.38mm Laminated glass	STC36
Series 517 Awning Window* <i>The actual tests were carried out on a product similar to this window (Series 516).</i>	3mm Annealed glass	STC30
	6.38mm Laminated glass	34 (-1;-2)
	10.38mm Laminated glass	STC36
Series 541 Sliding Door	4mm Toughened	28 (-1;-2)
	6.38mm Laminated glass	32 (-1;-2)
	7.52mm Laminated glass	32 (0;-1)
	10.38mm Laminated glass	35 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-1;-3)
Series 542 Sliding Door* <i>The actual tests were carried out on a product similar to this door (Series 541).</i>	4mm Toughened	28 (-1;-2)
	6.38mm Laminated glass	30 (-3;-4)
	7.52mm Laminated glass	32 (0;-1)
	10.38mm Laminated glass	35 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-1;-3)
Series 549 Hinged Door	6.38mm Laminated glass	32 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-2;-4)

\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# Designer Series Systems

## DESIGNER SERIES

Architecturally styled, high performance window and door systems

Designer Series windows and doors are architecturally inspired, featuring a 102mm frame and bold sash designs to give a clean, striking aesthetic. These systems are designed to offer superior performance characteristics ideal for high-end residential applications. The strong frame and sash profiles enable you to achieve larger openings, support heavier glass panels and create windows free of transoms for an unobstructed view. Designer Series systems combine contemporary aesthetics with superior performance, offering excellent strength, very low air infiltration and high water resistance.



SYSTEM	GLASS	RW (C, C <sup>+</sup> )
Series 601/602 Sliding Window	4mm Annealed glass	31 (-1;-2)
	6.38mm Laminated glass	33 (0;-1)
	10.38mm Laminated glass	35 (0;-1)
	4mm/8mm Air/4mm	32 (0;-2)
Series 613 Double-Hung Window	6.38mm Laminated glass	30 (0;-1)
Series 616 Awning Window	4mm Annealed glass	32 (-2;-3)
	6.38mm Laminated glass	34 (-1;-2)
	10.38mm Laminated glass	36 (-1;-2)
	6mm/12mm Air/6mm	35 (-1;-3)
Series 618 Sliding Door	6.38mm VLam Hush™ glass	32 (0;-2)
	10.5mm VLam Hush™ glass	34 (0;-2)
	20mm Insulating glass unit	35 (-1;-4)
Series 546 Bi-fold Window* <i>The actual tests were carried out on a product similar to this window (Series 549).</i>	6.38mm Laminated glass	32 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-2;-4)
Series 548 Hinged/ Bi-fold Door* <i>The actual tests were carried out on a product similar to this door (Series 549).</i>	6.38mm Laminated glass	32 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-2;-4)

\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# Designer Series with ThermalHEART™ Systems

## DESIGNER SERIES | ThermalHEART™

Thermally broken systems for improved energy efficiency

Designer Series with ThermalHEART™ is the latest addition to the Vantage range of high performance windows and doors.

Developed in response to growing environmental concern and requirement for energy efficient building designs, Designer Series with ThermalHEART™ offers significantly improved thermal performance and energy efficiency.

Ideal for those applications where minimising cold and heat transfer is a priority, this innovative range is 32% more thermally efficient than standard double glazed windows and doors.



SYSTEM	GLASS	RW(C, C <sup>tr</sup> )
Series 726 Awning Window	6.5mm VLam Hush™/12mm Air/6mm Tgh	40 (-1;-5)
	8.5mm VLam Hush/10mm Air/6.5mm VLam Hush™	40 (-1;-5)
Series 729 Hinged Door* <i>The actual tests were carried out on a product similar to this door (Series 549).</i>	6.38mm Laminated glass	32 (-2;-3)
	19mm Insulating glass unit	33 (-2;-4)
Series 730 Bi-fold Door* <i>The actual tests were carried out on a product similar to this door (Series 549).</i>	6.38mm Laminated glass	32 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-2;-4)
Series 731 Sliding Door	6.5mm VLam Hush™/12mm Air/6mm Tgh	37 (-1;-4)
	8.5mm VLam Hush™/10mm Air/6.5mm VLam Hush™	37 (-1;-3)

\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# Commercial Series Systems

## COMMERCIAL SERIES

Dedicated, high-performance commercial window and door systems

The Commercial Series offers a selection of locally designed and tested dedicated commercial systems. These systems were developed for use in commercial, institutional and light industrial applications and offer economical, high-performance glazing solutions. Designed to integrate seamlessly with Elevate™ Commercial framing suites, the range includes sliding, awning, and double-hung windows along with sliding and hinged doors.



SYSTEM	GLASS	RW (C, C <sup>tr</sup> )
<b>Series 452 Sliding Window*</b> <i>The actual tests were carried out on a product similar to this window (Series 504).</i>	3mm Annealed glass	STC22
	6.38mm Laminated glass	32 (-1;2)
	7.52mm Laminated glass	31 (-1;-2)
<b>Series 453 Double-Hung Window*</b> <i>The actual tests were carried out on a product similar to this window (Series 514).</i>	5mm Annealed glass	28 (-2;3)
	6.38mm Laminated glass	29 (-3;-4)
	7.52mm Laminated glass	30 (-2;3)
<b>Series 456 Awning Window*</b> <i>The actual tests were carried out on a product similar to this window (Series 516).</i>	3mm Annealed glass	STC30
	6.38mm Laminated glass	34 (-1;-2)
	10.38mm Laminated glass	STC36
<b>Series 461 Apartment Sliding Window*</b> <i>The actual tests were carried out on a product similar to this window (Series 471).</i>	6.5mm VLam Hush™ glass	
	10.5mm VLam Hush glass	
<b>Series 471 Apartment Sliding Door</b>	6.5mm VLam Hush™ glass	32 (-1;-3)
	10.5mm VLam Hush™ glass	33 (0,-2)
	6.5mm VLam Hush™/8mm	33 (-1;-2)
	Air/5mm Tgh	

\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# Architectural Series Systems – Windows

## ARCHITECTURAL SERIES

Strong, bold, stylish profiles for commercial architectural projects

The Architectural Series of high-performance windows and doors is both modern and meticulous in design. Its shapes reflect the designer preference for clean, flush surfaces, continuous sight lines and square-edge 'cubist' forms.

The system has been developed with aesthetic unity in mind – similar looks and lines for windows and doors, and common frame edges to simplify architectural detailing.

The Architectural Series has been designed with the strength and versatility to allow the choice of large formats and sizes increasingly favoured by architects.



SYSTEM	GLASS	RW (C, C <sup>++</sup> )
<b>Series 462 Sliding Window</b> <i>The actual tests were carried out on a product very similar to this window (Series 601).</i>	4mm Glass	31 (-1;-2)
	6.38mm Laminated glass	33 (0;-1)
	10.38mm Laminated glass	35 (0;-1)
	16mm IGU (4mm Glass / 8mm Air / 4mm Glass)	32 (0;-2)
<b>Series 464 ClearVENT™ Window</b> <i>The actual tests were carried out on a product very similar to this window (Series 614).</i>	6mm Annealed glass	26 (0;0)
<b>Series 463 Double-Hung Window</b> <i>The actual tests were carried out on a product very similar to this window (Series 613).</i>	6.38mm Laminated glass	30 (0;-1)
<b>Series 466 Awning Window</b>	6.5mm VLam Hush™	35 (-1;-4)
	6mm Tgh/12mm Air/6.5mm VLam Hush™	40 (-1;-5)
	6.5mm VLam Hush™ / 10mm Air/ 8.5mm VLam Hush™ glass	41 (-1;-5)
<b>Series 467 Casement Window</b> <i>The actual tests were carried out on a similar awning sash (Series 466).</i>	6.50mm VLam Hush glass	34 (-1;-2)
	6mm Toughened glass /12mm Air / 6.50mm VLam Hush™ glass	36 (-1;-2)
	8.5mm VLam Hush™ glass /10mm Air / 6.50mm VLam Hush™ glass	35 (-1;-3)
<i>We also tested a similar awning sash Series 616 and achieved the following results:</i>	4mm Glass	32 (-2;-3)
	6.38mm Laminated glass	34 (-1;-2)
	10.38mm Laminated glass	36 (-1;-2)
	24mm IGU (6mm glass / 12mm Air / 6mm glass)	35 (-1;-3)

\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# Architectural Series Systems – Doors

SYSTEM	GLASS	RW(C, C <sup>tr</sup> )
Series 410 Bi-fold Door <i>The actual tests were carried out on a product very similar to this door (Series 549).</i>	6.38mm Laminated glass	32 (-2;-3)
	5mm Tgh/9mm Air/5mm Tgh	33 (-2;-4)
Series 411 Bi-fold Door	6.38mm Laminated glass	28 (0;2)
	8.38mm Laminated glass	31 (-1;2)
Series 412 Bi-fold Door <i>The actual tests were carried out on a product very similar to this door (Series 411).</i>	6.38mm Laminated glass	28 (0;2)
	8.38mm Laminated glass	31 (-1;2)
Series 702/704 Sliding Door	6.38mm Laminated glass	30 (0;-1)
	10.38mm Laminated glass	31 (-1;-1)
	10.5mm VLam Hush™ glass	33 (0; -2)

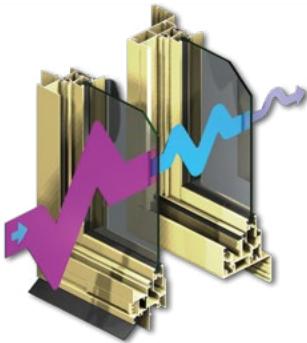
\*Results shown are based on actual tests carried out on a similar product, contact AWS for more information [techsupport@awsaustralia.com.au](mailto:techsupport@awsaustralia.com.au)

# SoundOUT™ Secondary Glazing Systems

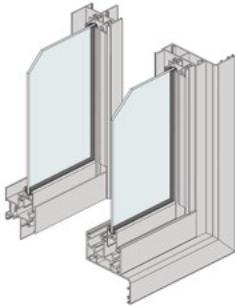
## ARCHITECTURAL SERIES

Innovative products to provide maximum sound reduction

Within the Vantage range of aluminium window and door systems, there are a number of specialty products. The SoundOUT™ range of secondary glazing windows and doors are purposely designed to improve the acoustic performance of the building envelope. Tested in accordance with AS1191-1985 by the National Acoustic Laboratories, the SoundOUT™ range can be used to dramatically reduce sound penetration into a building.

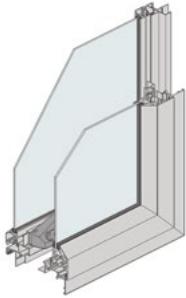


SYSTEM	PRIMARY GLASS	SoundOUT™ GLASS	RATING
Series 531 SoundOUT™ Sliding Window <i>With primary Series 504 Sliding Window</i>	3mm	3mm	STC 34
	3mm	4mm	STC 35
	3mm	5mm	STC 36
	3mm	6mm	STC 38
	3mm	6.38mm Tgh	STC 42
	3mm	7.52mm Lam	STC 42
	3mm	10.38mm Lam	STC 43
Series 532 SoundOUT™ Casement Window <i>With primary Series 516 Awning Window</i>	3mm	3mm	STC 38
	3mm	4mm	STC 39
	3mm	5mm	STC 41
	3mm	6mm	STC 42
	3mm	6.38mm Lam	STC 45
	3mm	7.52mm	STC 47
	3mm	10.38mm	STC 50
Series 533 SoundOUT™ Casement Window <i>With primary Series 516 Awning Window</i>	4mm	4mm	STC 40
	4mm	5mm	STC 40
	4mm	6mm	STC 41
	4mm	6.38mm Lam	STC 44
	4mm	7.52mm Lam	STC 45
	4mm	10.38mm Lam	STC 46



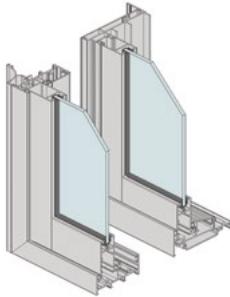
**Series 531 SoundOUT™ Secondary glazed sliding windows**

For residential/light commercial applications. Vantage SoundOUT™ sliding windows have been designed to go behind existing windows where noise is a problem. To significantly reduce sound, an air space of 75mm to 100mm between the inner and outer glass panels is required. All SoundOUT™ panels slide to allow cleaning of the inner face of the outer window/door. SoundOUT™ sliding windows can also be fitted with a multi-point key lock for maximum security.



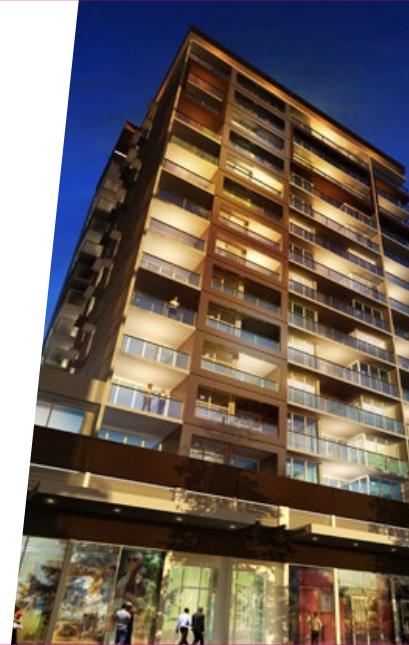
**Series 532 SoundOUT™ Secondary glazed casement windows**

For residential/light commercial applications. Vantage SoundOUT™ casement windows have been designed to go behind existing windows where noise is a problem. To significantly reduce sound, an air space of 75mm to 100mm between the inner and outer glass panels is required.



**Series 533 SoundOUT™ Secondary glazed sliding doors**

For residential/light commercial applications. Vantage SoundOUT™ sliding doors have been designed to go behind existing windows and doors where noise is a problem. To significantly reduce sound, an air space of 75mm to 100mm between the inner and outer glass panels is required. All SoundOUT™ panels slide to allow cleaning of the inner face of the outer window/door. SoundOUT™ sliding doors have flat finger pulls both sides.



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