

Noise

In an ever increasingly noisy world, Viridian™ offers effective sound reduction. While glass plays a vital role, we also bring our experience to all aspects of what is often a multi-faceted problem/solution.





Noise

Vlam Hush

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VLam Hush™

A sound solution to effective noise reduction

Reducing unwanted noise

Whether it's from traffic, aircraft, trains, factories or even neighbours, unwanted noise is a nuisance but it can be reduced with the right selection of glass. The Viridian VLam Hush™ range of laminated glass is specifically developed to do just that.

Designing to solve a noise problem

There are generally three components to be considered when solving a noise problem. These are the external noise, the noise reduction of the wall (windows and glazing) and the resulting noise in the room. The process of design requires that the external noise level is determined by measurement and the desired internal noise level is decided (refer Table 1). The design exercise is then to construct the wall in order to reduce the external noise level to that desired in the room – where the external noise is known from measurements and the internal noise level is recommended (ISO 140). For glass, this would involve subtracting the Rw value of the external noise level from the internal level to determine the type of glass required.

The source of the noise may be higher at certain frequencies. For example, traffic noise is a low frequency noise, while aircraft produce a high frequency noise.

A detailed solution would involve measuring the nature and intensity of the offending sound and choosing a glass product which would reduce the intensity sufficiently at all frequencies. It should be noted that glass is only one part of the room and all other components must be assessed as well. Example: For a living room on a busy street, the required glass Rw value is 75dB (busy street) – 40dB (living room) = 35dB (glass). Refer to Table 2 for glass options.

Sound reduction index

Rw is the weighted sound reduction in decibels which incorporates a correction for the ear's response. Every 10dB is perceived as twice as loud, so that a 20dB reduction would reduce the noise by four times.

Common solutions

Thick glass – the greater the thickness the better the noise reduction for low frequencies such as traffic noise. However, standard glass has a coincidence dip when the glass vibrates at the same frequency as the noise source. This is dependent on a glass thickness but generally occurs at higher frequencies such as those associated with aircraft noise.

- ◆ **Laminated glass** – the interlayer is particularly effective at dampening which provides superior sound reduction over the same thickness monolithic glass. Further, the dampening effect of laminated glass reduces the coincidence dip at these higher frequencies and therefore is a solution for aircraft and voice noise.
- ◆ **Double glazing** – standard insulating glass units do not provide good noise reduction. For insulating glass units to be effective, an air gap of 100mm to 200mm needs to be provided. However, the incorporation of one or two panels of laminated glass, a glass of differing thickness or VLam Hush into the unit provides excellent results.

Table 1

Common sound levels		Recommended interior noise levels	
	dB		dB
Environment			
Threshold of hearing	0	Bedroom	30–40
Conversational speech	65	Classroom	35–40
Average traffic (kerbside)	70	Living room	40–45
Busy traffic	75	Private office	40–45
Loud traffic	80	Open office	45+50
Live band (20 metres)	105		

Table 2 – Sound insulation data (dB)

Thickness (mm)	Monolithic							Laminated			VLam Hush™			
	3	5	6	10	12	15	19	6	10	12	6	8	10	12
Single	30	32	32	36	37	37	40	33	36	37	36	38	39	40
ThermoTech	–	34	35	–	–	–	–	–	–	–	40	42	43	–
ThermoTech (double)	–	–	–	–	–	–	–	**	–	–	46	48		

ThermoTech is an IGU with 16mm airspace and 6mm, 8mm or 10mm outer and 8.5mm VLam Hush™ inner. ThermoTech (double) is an insulating glass unit with 16mm airspace with an 8.5mm VLam Hush™ inner. **Contact Viridian



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VLam Hush™

Description

Viridian **VLam Hush™** is a laminate that uses a specially developed interlayer to dampen noise, providing enhanced sound insulation performance. This means that thinner and lighter glass can be used for equivalent acoustic performance. VLam Hush reduces the coincidence dip of standard monolithic and laminated glass.

Considerations

Vents in a wall provide a simple entry point for noise. In most houses there is a gap between the roof and the ceiling above the external walls which allows noise into the ceiling space. If the house is built on stumps then noise has access to the under floor space. Windows and doors which do not seal well will also allow noise to pass around their frames, so a proper assessment of the entire building is required in order to develop an adequate solution.

Ready Reckoner

The following is a guide only. It is not a substitute for a detailed sound analysis.

Features and benefits

- ◆ Laminated Grade A safety glass
- ◆ Available in 6.5 to 12.5mm thicknesses in 3660 x 2440mm
- ◆ Can be incorporated with other solar control options
- ◆ Can be incorporated in a ThermoTech insulating glass unit
- ◆ Compared to 6mm float glass, 6.5mm VLam Hush reduces noise by over 40%



External noise source (dB)		Product selection		
		Traffic	Aircraft	Voice
Low 65	Office*	6mm VFloat	6mm VFloat	6mm VFloat
	Living Room*	6.38mm VLam Hush	6.38mm VLam Hush	6.38mm VLam Hush
	Bedroom*	6.5mm VLam Hush	6.5mm VLam Hush	6.38mm VLam Hush
Medium 70	Office	6mm VFloat	6mm VFloat	6mm VFloat
	Living Room	6.5mm VLam Hush	6.5mm VLam Hush	6.38mm VLam Hush
	Bedroom	8.5mm VLam Hush	8.5mm VLam Hush	8.5mm VLam Hush
High 75	Office	6mm VFloat	6mm VFloat	6mm VFloat
	Living Room	10.5mm VLam Hush	10.5mm VLam Hush	8.5mm VLam Hush
	Bedroom	12.5mm VLam Hush + 16mm airspace + 8.5mm VLam Hush	12.5mm VLam Hush + 16mm airspace + 8.5mm VLam Hush	12.5mm VLam Hush

*The internal noise criteria set is: Office = 45-50dB Living room = 40-45dB Bedroom = 30-40dB

Specific to New Zealand, VLam Hush is manufactured as a CIP Laminate where two sheets of glass are bonded together using a specifically formulated noise reduction resin as the sound reducing interlayer. The CIP laminating process provides a wide range of glass options and is particularly suited for toughened laminated glass. It is manufactured with a clear edge tape to separate the glass before a UV cured resin is used to laminate the glass and produce a Grade A safety glass.

Applications

- ◆ Apartments
- ◆ Offices
- ◆ Hospitals
- ◆ Airports
- ◆ Buildings close to main roads

Maximum size

- ◆ 3660 x 2440mm

Thickness of resin (New Zealand)

- ◆ 1mm
- ◆ 1.5mm
- ◆ 1.8mm

How to specify

- ◆ **Select glass name**
Viridian VLam Hush
- ◆ **Select thickness – process**
6.5mm to 12.5mm – Laminated
- ◆ **Select colour**
Refer to product range chart

Product range

Product	Thickness (mm)			
	6.5	8.5	10.5	12.5
Clear	◆	◆	◆	◆
SuperGreen		◆	◆	◆
ComfortPlus	◆		◆	◆

Other custom laminated options available