

## SWITCHABLE PRIVACY GLASS

### Introduction

The world of building acoustics is highly complex, mainly due to the manifold and diverse structural components that make up a building and its internal and external noise factors such as ambient, persistent noise from air, road or rail traffic. The glass industry takes the recommended design sound levels from AS/NZS 2107:2000 for both satisfactory and maximum levels and lists the glass to be used to achieve the desired sound level at the inside of the glass.

### Key Points

- Architects and builders will take into account a client's sound requirements when specifying our product, Switchglass™ (Switchable Privacy Glass) and they may use the services of an Acoustic Consultant - an authoritative source of information and advice for analysing and developing solutions to noise problems. Consideration should be given to employing their expertise.
- Avoid specifying far higher ratings than needed. High Rw ratings add cost.
- Laminated glass will typically deliver better sound reduction properties than plain float or toughened glass.
- Switchglass™ is a laminated glass product and, because of the nature of our PDLC film and its supporting PVB interlayers, our product already provides an excellent Rw rating. A basic, standard panel of Switchable Privacy Glass with a thickness of 9.52mm affords an acoustic rating of 35Rw, while heavier construction of the panels (using thicker panes or triple-laminated panels) can achieve far higher levels. Another option for achieving higher Rw values is to incorporate Switchglass panels into IGUs (Double Glazed Units).
- For effective acoustic performance of a room all walls, doors and windows must have the proper seals in place.

### Applications

#### Interior

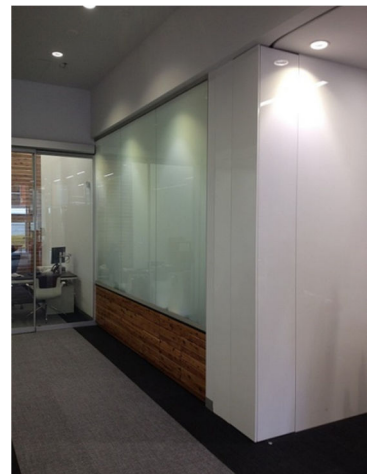
- Operable walls, office partitions, conference rooms, executive offices
- Automatic/manual sliding doors, bi-fold doors, hinged doors
- Windows

#### Installation

Switchable Privacy Glass installs as per normal glass, but requires qualified Glaziers and Licensed Electricians to install the product.

## Acoustic Solutions

*"Switchglass - implementing research results to produce proprietary acoustic switchable privacy glass panels"*



## Guide to the expected range of Rw values for typical applications (based on laboratory testing)

Guide to Expected Range of Rw Values for Typical Applications		
Effect*	LAB Rw	Typical Use
Mutes normal conversation	34 – 38	Primary Schools
Normal voices may be intelligible	37 - 41	Church Halls, Quiet Meeting Rooms
Normal voices barely intelligible	40 - 44	Typical Meeting Rooms, Schools
Normal voices unintelligible	43 - 47	Boardrooms, Conference Centres
Raised voices barely unintelligible	46 - 49	Hotel Functions Rooms
Major function noise controlled	47 - 55	Convention Centres

\*Assumes peripheral leakage is minimised.

It is impractical for any manufacturer to test every combination of product type, configuration, layout, surface finish and so on. Tests are done on benchmark constructions and supplemented by acousticians' opinions if necessary.

## Guide to Switchable Privacy Glass Acoustic Data Customised acoustic combinations available on request

Examples of Switchable Privacy Glass Acoustic Data					
Test ID	Overall Thickness	Construction - Laminated	Interlayer	dB Acoustic Rating (Rw)	Specification ID Code
RAL:TL06-151	9.52mm	4mm glass x 1.52 Switchglass interlayer x 4mm glass	Standard	35	SGS-9.52
RAL:TL06-152	10.35mm	4mm glass x 2.35 Switchglass interlayer x 4mm glass	Acoustic	36	SGA-10.35
RAL: TL04-204	11.52mm	5mm glass x 1.52 Switchglass interlayer x 5mm glass	Standard	36	SGS-11.52
RAL: TL07-197	12.35mm	5mm glass x 2.35 Switchglass interlayer x 5mm glass	Acoustic	37	SGA-12.35
RAL: TL04-139	13.52mm	6mm glass x 1.52 Switchglass interlayer x 6mm glass	Standard	37	SGS-13.52
RAL: TL07-186	14.35mm	6mm glass x 2.35 Switchglass interlayer x 6mm glass	Acoustic	39	SGA-14.35
RAL: TL06-140	17.52mm	8mm glass x 1.52 Switchglass interlayer x 8mm glass	Standard	38	SGS-17.52
RAL: TL07-208	18.35mm	8mm glass x 2.35 Switchglass interlayer x 8mm glass	Acoustic	40	SGA-18.35
RAL: TL06-121	21.52mm	10mm glass x 1.52 Switchglass interlayer x 10mm glass	Standard	41	SGS-21.52
RAL: TL06-122	22.35mm	10mm glass x 2.35 Switchglass interlayer x 10mm glass	Acoustic	42	SGA-22.35
RAL: TL04-141	25.52mm	12mm glass x 1.52 Switchglass interlayer x 12mm glass	Standard	42	SGS-25.52
RAL: TL07-188	26.35mm	12mm glass x 2.35 Switchglass interlayer x 12mm glass	Acoustic	43	SGA-26.35

### Glass and Framing System Construction

RAL: TL06-269	42.90mm	8.38mm (25AS) Spacer + 9.52mm Switchglass	Standard	44	SGC-42.9
RAL: TL06-270	119.90mm	8.38mm (102AS) Spacer + 9.52mm Switchglass	Standard	47	SGC-119.9
RAL: TL06-324	131.90mm	8.38mm (114AS) Spacer + 9.52mm Switchglass	Standard	44	SGC-131.9

### Construction – Double Laminated IGU

RAL: TL06-197	27.52mm	6mm (12AS) Spacer + 9.52mm Switchglass	Standard	44	SGDG-27.52
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# SWITCHGLASS

## Noise Descriptors

For the purpose of simplification, Switchglass uses only the more frequently used and acceptable Rw value in relation to its Switchable Privacy Glass.

### dB – Decibels

The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB (SPL) is relative to 20 micropascals ( $\mu\text{Pa}$ ) =  $2 \times 10^{-5}$  Pa, the quietest sound a human can hear.

### Rw – Weighted Sound Reduction Index

A measure of sound insulation performance of a building element, the Rw is a number used to rate the effectiveness of a soundproofing system or material. Increasing the Rw by one translates to a reduction of approximately 1dB in noise level. Therefore, the higher the Rw number, the better a sound insulator it will be. The single Rw figure is a composite rating of sound reduction at frequencies from 100 Hertz (Hz) to 5,000 Hz, when compared to an Australian standard line.

Note that Weighted Sound Reduction (Rw) was known as Sound Transmission Class (STC). Numerical values are comparable. The unit of the Weighted Sound Reduction Index is decibel (dB).

## Technical Specifications

<b>Glass Colour</b>	Can be combined with colour interlayers or a wide range of tinted glass to meet any requirement
<b>Decorative Glass</b>	Screen printed, sand blasted, fritted and/or patterned
<b>Glass Type</b>	Low iron, annealed, heat strengthened, tempered/toughened (all laminated)
<b>Thickness</b>	From 9.52mm to multi-layer laminates
<b>Size</b>	Up to 1,820mm x 3,500mm – Switchglass has the largest size available on the market
<b>Shape</b>	Any shape or curved, including holes, notches and cut-outs
<b>Environmental</b>	Storage: -20degC to 70degC Operation: -10degC to 60degC
<b>Electrical</b>	Driving Voltage: 65V AC (Transformer supplied) Current: 200mA per square metre Power: 5Watts per square metre
<b>Switching Time</b>	Approx 100 milliseconds at room temperature
<b>Optical</b>	Visual Light Transmission: Approx 75% to 80% (in 'on' state) Scattering Effectiveness: Approx 25mm
<b>Life</b>	Average of 25 years (indoors) with due care - bench tested at over 7,000,000 switches (on and off)

- Claim is supported by Manufacturer's testing data.
- Standard Warranty two (2) years or an Extended Warranty of up to five (5) years on Switchable Privacy Glass panel (or as specified on quotation).
- To help preserve the longevity of its liquid crystals, Switchable Privacy Glass panel must have at least 4 to 5 hours in its "off" state during a 24 hour cycle and must not be left "on" continuously for over 20 hours at a time.

