



By Appointment to
Her Majesty The Queen
Manufacturer and Supplier
of Secondary Glazing
Selectagaze Ltd.
St Albans

Uniclass L413

CI/SfB

| (31.4) | Hh4 |

July 2023

Secondary Glazing Product and Performance Guide



selectagazeTM

PRECISION BESPOKE SECONDARY GLAZING

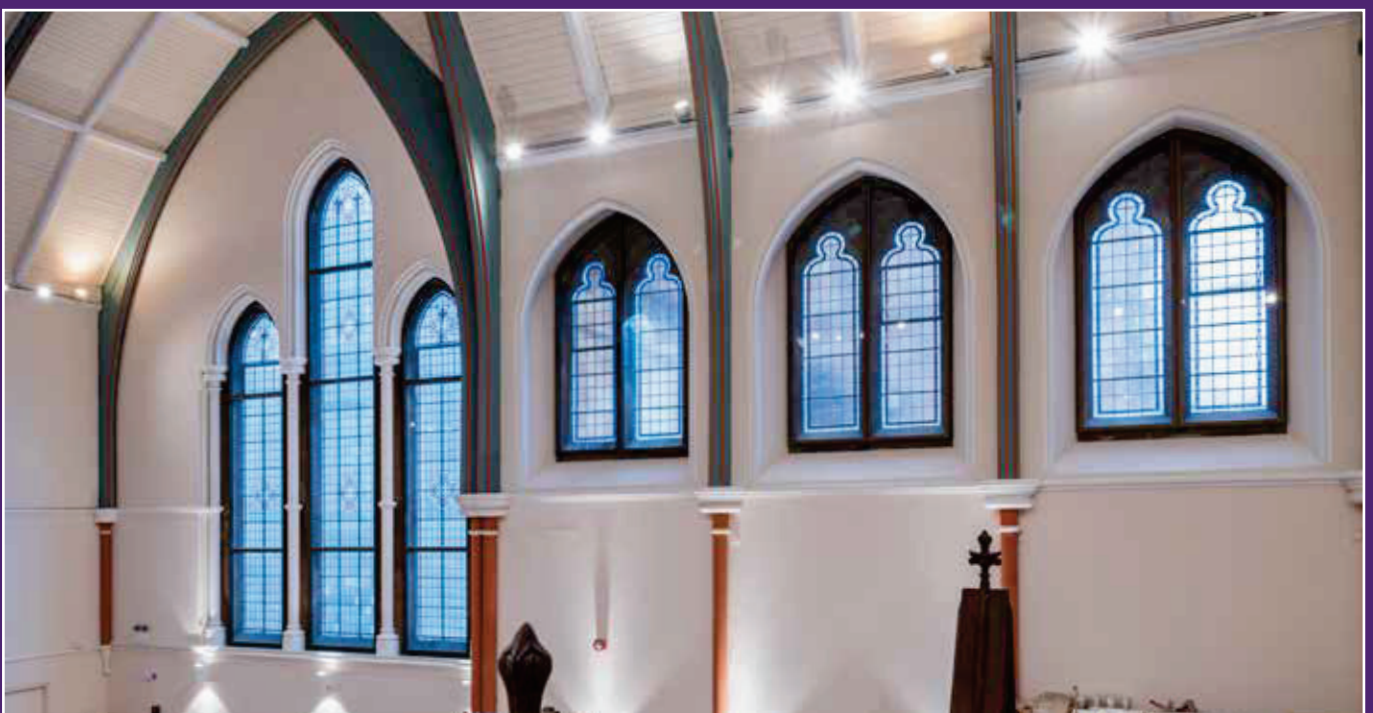
Founded in 1966, Selectaglaze is the UK's leading specialist in secondary glazing.

All products are bespoke and designed to meet the individual needs of each project. Manufacture takes place at the company's St Albans factory; installations are carried out by in-house teams, or through a network of regional partners.

The secondary glazing product range is the result of over 50 years of research and development. Independently tested and certified, they will meet exacting requirements for acoustic and thermal performance, environmental control, protection against intruders, bomb blast, ballistic attack and fire. The extensive range offers the designer a solution to suit most types of building and window styles across all market sectors.

Quality of product and service is extremely important; as testament, the company was pleased to be granted a Royal Warrant in 2004.

**Scan to watch the
Selectaglaze story**





What is secondary glazing?

Secondary glazing is a fully independent internal window, fitted on the room-side of the existing (primary) window, to form a double window or 'double glazing'. The gap between the primary and secondary windows can vary, depending on how or why the additional glazing is to be installed, e.g. the gap is normally greater when noise insulation is the priority.

Installing secondary glazing will significantly improve a building's environment by providing improved thermal performance, noise reduction, as well as enhanced security. Integral seals are effective in minimising the ingress of dust and dirt, thereby helping to preserve clean areas.

Major benefits

Warmer – improved thermal insulation by reducing heat loss and excluding draughts. This means lower energy bills, a smaller carbon footprint and higher rated Energy Performance Certificates (EPCs) or BREEAM ratings.

Quieter – more effective noise insulation leads to quieter, less stressful environments and reduced sleep disturbance. Secondary glazing can be a very effective way of meeting exacting noise criteria demanded by planning authorities.

Safer – provides an additional security barrier that will deter intruders, offer protection against blast and even against fire arms or fire.

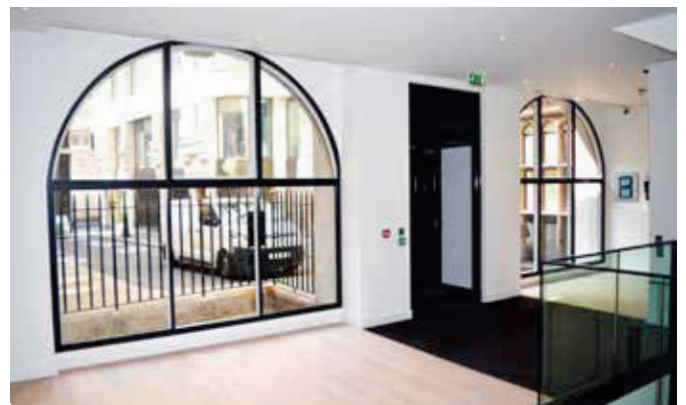
Typical applications

Secondary glazing is specified in a wide variety of buildings including those used as hospitals, hotels, offices, museums, homes, schools and colleges, churches, theatres, pubs and secure establishments.

Its discreet, sympathetic and neat unobtrusive design makes it the ideal solution to preserve and retain the character of older, more traditional buildings and satisfies the requirements of all the UK heritage and conservation bodies for use in Listed buildings. It is specified for new build projects on brownfield sites in need of higher levels of noise insulation and for more modern buildings wishing to improve thermal performance by creating triple glazing. It is increasingly used in retrofit projects aiming to achieve net zero targets.

Sustainability

Secondary glazing is more sustainable than a replacement of primary windows – the embodied carbon in the existing windows is retained and there is no carbon cost associated with removing and sorting materials for recycling or landfill. Selectaglaze secondary glazing is incredibly long-lasting but at the end of life it is 99% recyclable. Recycled content in Selectaglaze products is at 35% for glass and 60% for aluminium and the company works with its suppliers to innovate and increase these numbers further. Selectaglaze timber is FSC certified. As a provider of sustainable solutions for its customers, Selectaglaze is also committed to reducing its own carbon footprint, and the drive towards net zero is recognised through Planet Mark Certification.



Anatomy of Selectaglaze secondary glazing



Framing

Sections are designed and extruded from aluminium alloy. This strong, lightweight material can be formed to create the slender, complex shapes needed to accommodate seals, fixings and specialist hardware.



Forming

Selected sections can be curved and shaped to match the primary window.



Finishes

Framing is available in two types of finish:

1. **Polyester powder paint coated** Standard colour is HIPCA White semi-gloss; other RAL colours in flat, metallic or textured finishes, to order, including wood grain effect.
2. **Anodised** In natural silver, bronze and a limited range of other colours.

Both paint and anodised finishes are very durable with long life expectancy and minimal maintenance.



Gaskets

Glazing is held in position by specialist gaskets or bonding tapes. They are available in black and white.

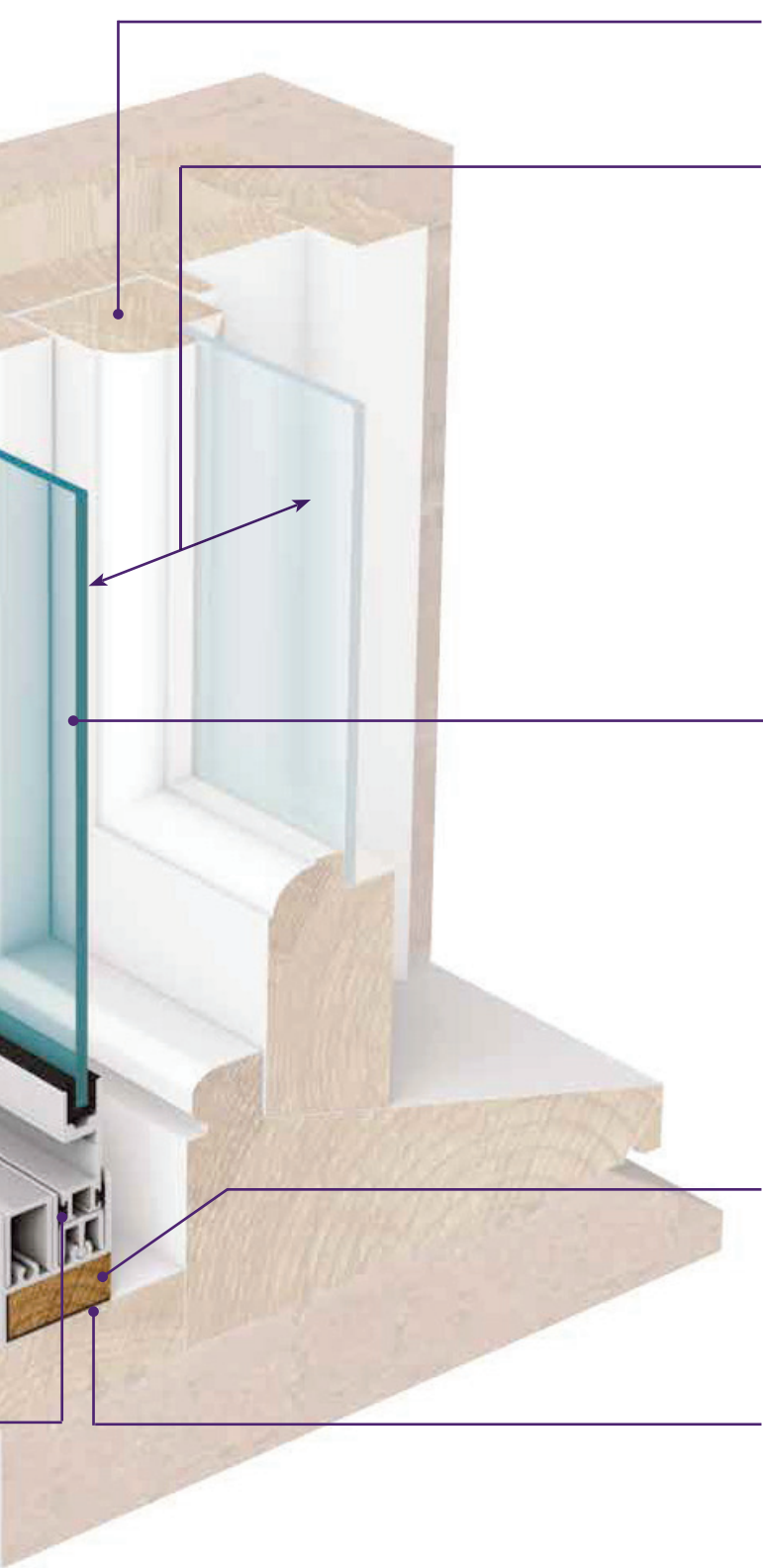


Weatherseals

Sliding units are fitted with twin silicone-treated, grey polypropylene pile seals.

Hinging units are fitted with high performance Q-Lon seals (in white or black). This material has excellent 'memory' and will retain its original shape for years, maintaining optimum sealing and acoustic performance.





Primary window

The outer or existing window frame.

Cavity

The gap between the primary and secondary windows.

Glazing

Glazing complies with BS 6262: 2005, the Code of Practice for glazing in buildings, and meets the requirements of Building Regulations Part K4.

Glass thickness varies from 4mm to 28mm depending on the product and application.

Other glazing options include:

Enhanced thermal

- low emissivity (hardcoat)
- sealed glass unit (various specifications)

Enhanced acoustic

- acoustic laminates

Safety

- toughened
- laminated

Solar control

- body tinted

Privacy

- patterned
- opaque laminate
- screen printed or etched
- switchable glass
- sealed glass unit with integral blind

Clarity

- anti-reflective glass
- low iron glass

Security

- anti-bandit laminates
- polycarbonate sheet
- glass/polycarbonate composites

Grounds and sub-frames

Custom made timber grounds can accommodate splayed or out of shape openings. All timber grounds and sub-frames are made from certified timber products.

Sealants

Timber grounds, sub-frames and aluminium frames are bedded on an acrylic sealant to provide a lasting perimeter seal.

Selectaglaze has a policy of continual product improvement and innovation; therefore the company reserves the right to change product specifications without prior notice. Colours shown in this brochure are as accurate as allowed for by the printing process.

Thermal performance

An independent, correctly installed and sealed secondary window frame will minimise air leakage; it also ‘traps’ an insulating layer of air that can reduce heat loss by up to 50% using standard glass and 65% with low-E glass.

Furthermore, sealed unit glazing, available with selected systems, creates triple glazing and even higher levels of insulation. The result is a more comfortable living or working environment with reduced energy demand.

Why improve?

The 2008 Climate Change Act committed the UK to reduce greenhouse gas emissions by 80% against 1990 levels by 2050. Since buildings account for 40% of emissions and 80% of existing stock will still be standing in 2050, retrofit solutions will be essential if the targets are to be met.

Building Regulations Approved Document L: Parts L1B and L2B cover the energy efficiency in buildings undergoing renovation or upgrade. Controlled fittings such as windows must meet strict performance standards, but the regulations acknowledge the sensitivity of working on Listed buildings. Hence, single-glazed windows that are part of the historic fabric of the building can be retained and secondary windows incorporating low-emissivity glass fitted, subject to Listed Building Consent.

Energy Performance Certificates (EPC) and Minimum Energy Efficiency Standards (MEES) The EPC forms the foundation of the MEES regulations which came into force on 1 April 2018 and further updated in 2020. After that date a landlord, with the exception of public sector domestic landlords, cannot grant a tenancy to new or existing clients if the property has an EPC rating below E. Existing domestic tenancies are not affected until 1 April 2020, and non-domestic 1 April 2023.

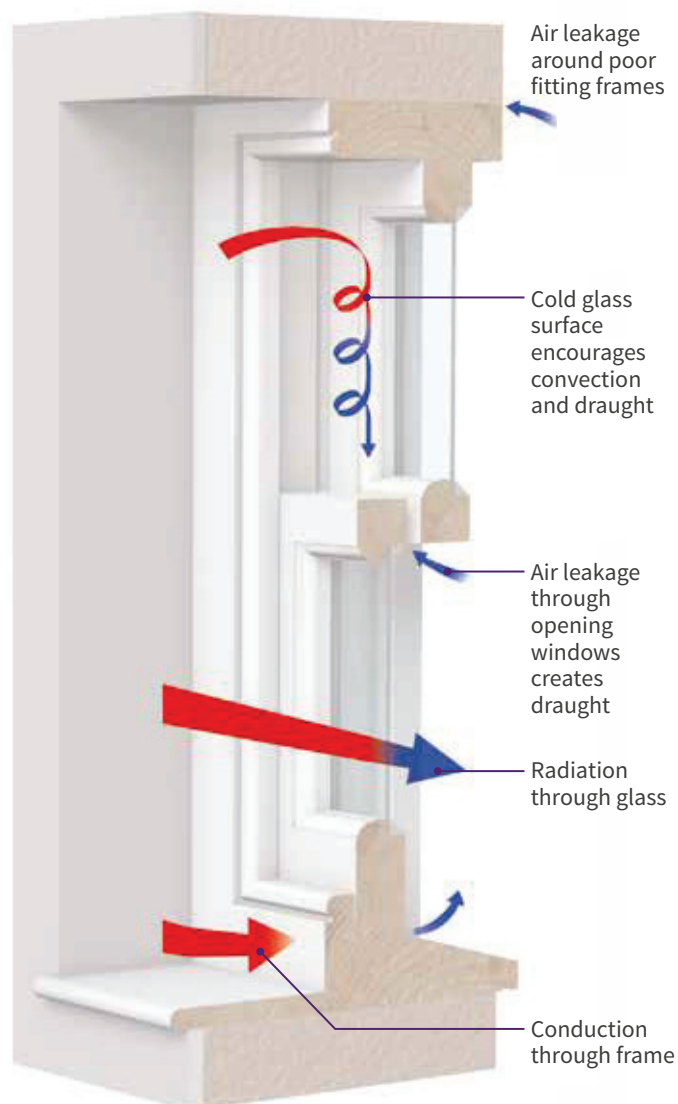
Retrofitted secondary glazing can offer an effective way to improve a building's EPC and make it significantly more attractive to a tenant.

BREEAM is the UK's leading assessment method for sustainability in buildings and addresses many issues including energy, health and wellbeing. Secondary glazing can effectively contribute towards a higher rating.

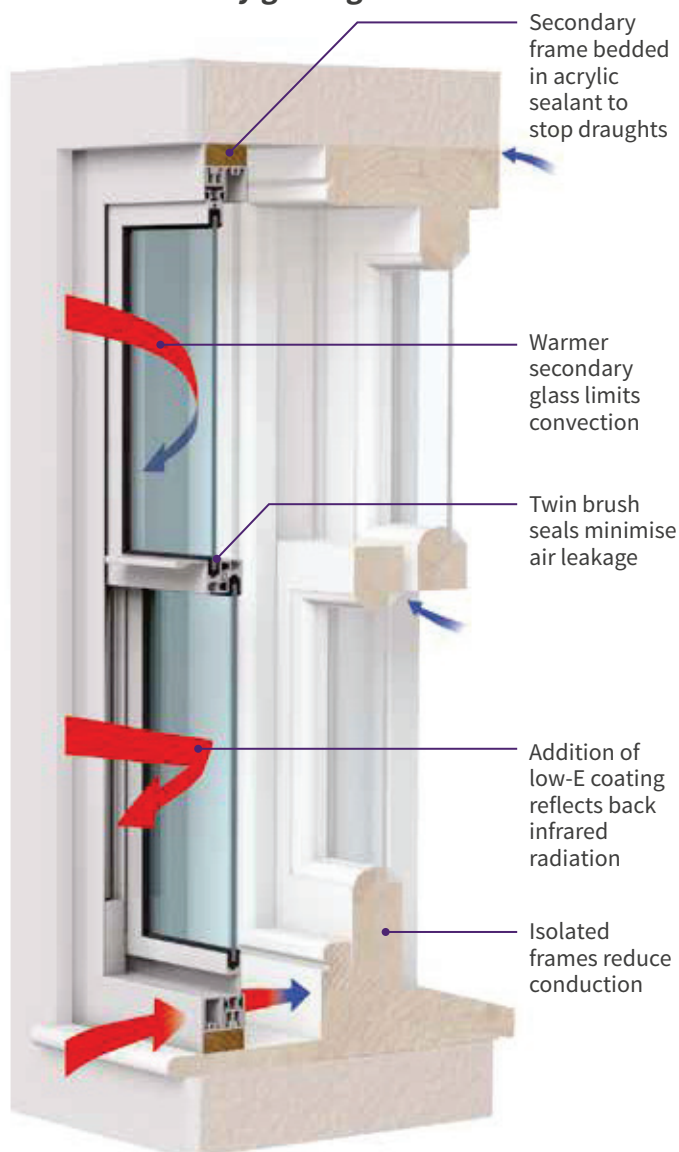


How secondary glazing improves thermal performance

Original window...



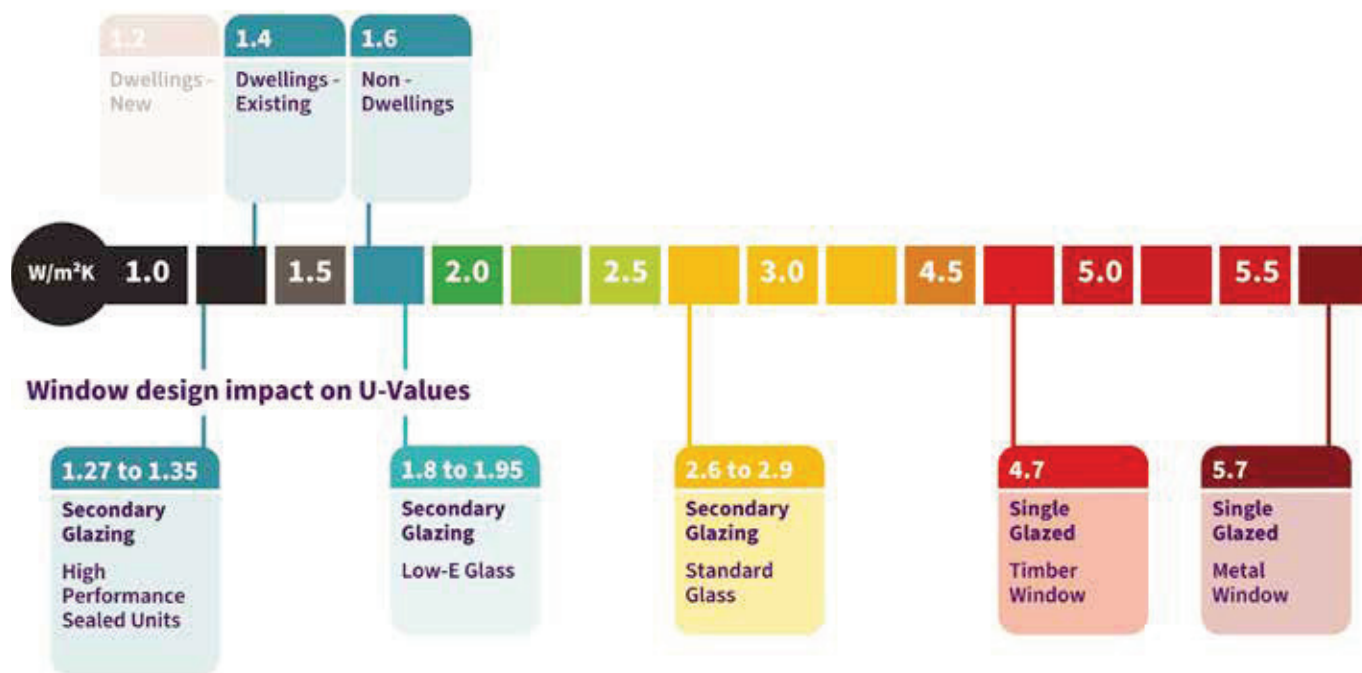
...with secondary glazing



The secondary window traps an insulating mass of air between the inner and outer glass and the resulting warmer surface of the inner glass limits convection currents. Isolated frames are also less conductive and draughts are significantly reduced by efficient seals applied both to the frame and opening panels. If a low-E coating is applied to the inner glass, it will reflect back infrared radiation and so retain energy in the room.

Zero in on U-values

Building Regulations – Approved Document Part L*



* Exemptions may apply to Listed and period properties

Notes

U-value is a measure of heat loss expressed in W/m^2K and shows the rate of heat loss per m^2 of material when the temperature difference between inside and outside is one degree. The lower the rating the better the insulation. As secondary glazing is used in combination with primary windows, U-values are normally calculated using modelling software.

Low-E glass has a hard metallic coating on the surface facing the cavity, which significantly helps with heat containment. There is a small reduction in light transmittance and a slight roughness on the coated surface, which can lead to light scatter and may be visible as a haze when the sun is strong and low. This is not a defect in the glass. The coated surface should be cleaned occasionally with a lint free cloth and clean soapy water. Abrasive materials must not be used.

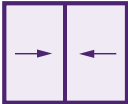
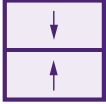
Solar gain is the warming effect of the sun which can be a benefit in the winter but a problem in the summer months. The g-value measures the amount of solar energy transmitted through a material with 0 representing no transmittance and 1 the maximum. A standard glass achieves 0.8 but when lower levels are needed, for example on a south facing façade, a specialist window film can be applied to the primary window.

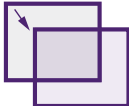
Testing and certification

The thermal performance of the product range has been assessed against both timber and metal primary windows by the Centre for Windows and Cladding Technology (CWCT).

Please visit our website for performance figures. Summary tables are on page 49.

Product selector

HORIZONTAL SLIDER (HS)	VERTICAL SLIDER (VS)	HINGED CASEMENT (HC)
		
		
RECOMMENDED APPLICATION	RECOMMENDED APPLICATION	RECOMMENDED APPLICATION
Ideal where easy access is a priority; sashes slide within the frame so no problems with blinds or curtains; large and ribbon windows can be accommodated by linking units.	Ideal for treating sash windows; operates with spring balances which support the weight of the sash in all positions.	Offers full and easy access to an outer window or door. Neat and unobtrusive with single casements having no mullions or transoms to impede the view.
SERIES 10	SERIES 20	SERIES 45
Page 20	Page 24	Page 30
Slimline versatile framing system in 2, 3 or 4 pane options that provides easy access to the outer window.	Slimline framing system ideal for treating traditional sash windows often found in heritage properties.	Slimline framing system suitable for treating many types of window and standard sized doors. When fitted to traditional sash windows new sight lines are avoided. Single casements accredited to Secured by Design.
SERIES 15	SERIES 25	
Page 21	Page 25	
Mid-range discrete framing system in 2 or 3 pane options for larger windows; also accepts thicker glass to achieve higher noise insulation.	Mid-range framing system with higher capacity balances for larger windows, supports thicker glass to achieve higher noise insulation; accredited to Secured by Design.	
SERIES 80	SERIES 90	SERIES 41
Page 22	Page 26	Page 31
Heavy duty framing system in 2, 3 or 4 pane options for very large windows. 2 and 3 pane versions accredited to Secured by Design.	Heavy duty framing system with specialist balances that allows very large sash windows to be treated and is accredited to Secured by Design.	Heavy duty framing system suitable for large windows and doors; supports thicker glass for higher noise insulation and both single and double casements accredited to Secured by Design.
SERIES 85	SERIES 95	SERIES 50
Page 23	Page 27	Page 32
High security framing system in 2 panes only, providing significant levels of intruder resistance and blast mitigation.	High security framing system capable of providing significant levels of intruder resistance and blast mitigation.	High security framing system capable of treating very large windows and doors; provides significant levels of intruder resistance and blast mitigation.
	SERIES 60	SERIES 47
	Page 28	Page 33
	Specialist framing system allowing individual panes to tilt inwards on safety stays to assist with cleaning.	Specialist framing system with very slim profiles to allow installation within the staff bead of smaller, traditional sash windows.

LIFT-OUT (LO)	FIXED LIGHT (FL)	DEMOUNTABLE FIXED LIGHT (DFL)
		
		
RECOMMENDED APPLICATION	RECOMMENDED APPLICATION	RECOMMENDED APPLICATION
Offers a practical solution for treating windows which are rarely opened, but require occasional access for cleaning or maintenance.	Generally used in combination with other products as over lights or side lights and particularly useful for arched windows.	Provides secure glazing to vulnerable windows and vision panels to Control Rooms and Laboratories.
SERIES 31	SERIES 46	
Page 34	Page 38	
Slimline framing system usually applied to smaller windows.	Slimline framing system suitable for smaller windows. Can be shaped and curved.	
SERIES 45		
Page 35		
Slimline framing using Series 45 hinged profiles without hinges. Suitable for larger and curved windows.		
SERIES 41	SERIES 42	SERIES 43
Page 36	Page 39	Page 42
Heavy duty framing using Series 41 hinged profiles without hinges. Suitable for very large and curved windows; supports thicker glass for higher noise insulation.	Heavy duty framing system accepting thicker glass for higher noise insulation. Can be shaped and curved and is accredited to Secured by Design.	Heavy duty framing system offering intruder resistance and blast mitigation. Minimal section size suited to heritage buildings.
		SERIES 55
		Page 43
	SERIES 40	High security framing system providing significant intruder resistance, blast mitigation and protection against hand guns.
	Page 40	
	Specialist framing system offering 30 minutes fire integrity.	



An extremely slim hinged casement unit that will fit within the staff bead position of a traditional sash window and is designed to provide high levels of thermal insulation with minimal intrusion.



FEATURES

- Strong, purpose designed flush hinges colour matched to frame
- 4mm toughened, low-E glass
- Multipoint latch (ref L16)
- Removable colour matched operating catch (ref H19)
- 90° restrictor stay
- Twin compression seals ensure high sealing efficiency
- Fixings are concealed within the frame

DIMENSIONS

Recommended maximum frame

Format	Height (mm)	Width (mm)
SINGLE SIDE HUNG	2000	1000

Minimum sash (h)400mm x (w)300mm

FRAME COLOUR

Stock finish is white HIPCA 9910 semi-gloss

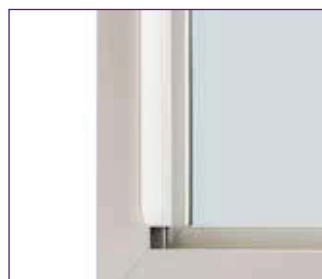
Any standard powder paint, wood grain finish or anodised finish to order

OPTIONS

No options available

Ironmongery

HANDLES AND FINGER PULLS



H1 Integral Finger Pull



H3 Recessed Finger Pull



H4 Moulded Handle



H6 Slimline Handle



H7 Non-Locking Handle



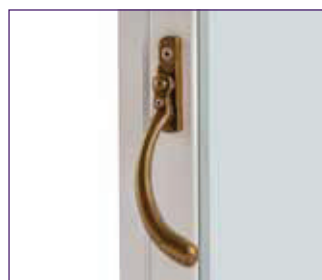
H8 Locking Handle



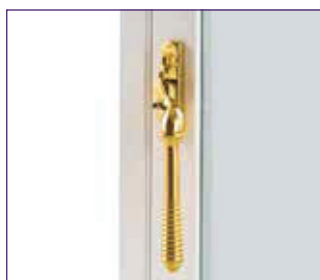
H9 Rosette



H10 Finger Pull



H12 Peardrop Handle (lockable)



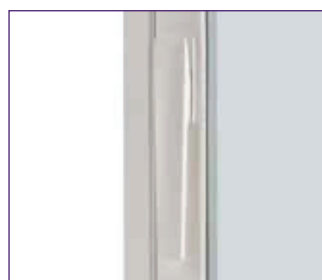
H15 Reeded Handle (lockable)



H16 Monkey Tail Handle (lockable)



H17 Cranked 'D' Handle



H18 Vivo Low Profile Handle



H19 Removable Catch



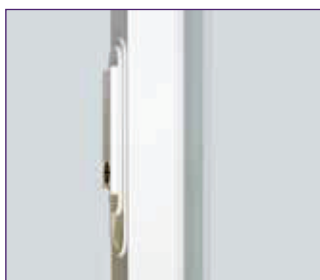
H21 Flush Lock with Cover Disc



H22 Flush Lock with Security Cover Plate

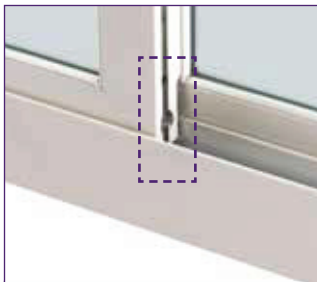


H24 S85/95 Locking Actuator



H26 S80/90 Locking Actuator

LOCKS AND CATCHES



L1 Shoot Bolt



L2 Fitch Catch (lockable)



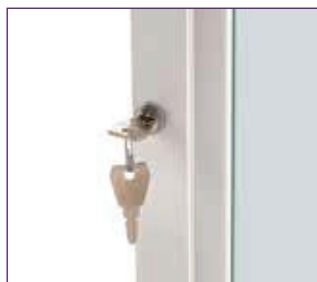
L3 SBD Fitch Catch (2 per unit)



L4 Plunge Lock



L7 Spring Catch



L11 Mini Camlock



L12 Screwlock

L13 S10/20 Sliding latch
L24 S15/25 Sliding latch

FINISHES

Handles and Finger Pulls	Finish
H1 Integral Finger Pull	CM
H3 Recessed Finger Pull	CM
H4 Moulded Handle	CM
H6 Slimline Handle	WH, BL, GO, PC, SC
H7 Non-Locking Handle	CM
H8 Locking Handle	CM
H9 Rosette (Square Drive/Removable Key)	CM
H10 Finger Pull	CM
H12 Peardrop Handle (lockable)	BL, PB, PC
H15 Reeded Handle (lockable)	PB, PC, SC
H16 Monkey Tail Handle (lockable)	BL
H17 Cranked 'D' Handle	CM
H18 Vivo Low Profile Handle	CM, PC, SC
H19 Removable Catch	CM
H21 Flush Lock with Cover Disc	CM
H22 Flush Lock with Security Cover Plate	CM
H24 S85/95 Locking Actuator	CM
H26 S80/90 Locking Actuator	CM

Locks and catches	Finish
L1 Shoot Bolt	Internal – not seen
L2 Fitch Catch (lockable)	WH, BL, GO, PC, BS
L3 SBD Fitch Catch (2 per unit)	WH, BL, GO, PC, BS
L4 Plunge Lock	SI
L11 Mini Camlock	SI
L12 Screwlock	WH, BL
L13 S10/20 Sliding Latch	CM
L24 S15/25 Sliding Latch	CM
L29 Sprung Restrictor Stay	Internal – not seen

Key to Finishes

BL – Black
 BS – Brushed Steel
 CM – Colour to Match Frame*
 DG – Dark Grey
 GO – Gold
 PB – Polished Brass
 PC – Polished Chrome
 SC – Satin Chrome
 SI – Silver
 WH – White

* Closest match for moulded materials
(not applicable for anodised finishes)

Fixing details

Selectaglaze secondary windows are designed with concealed fixings to present a clean appearance. Odd leg framing systems allow tolerances to be accommodated without the need for cover fillets to the internal face. Frames and associated timbers are purpose made to provide a tight fitting seal and so ensure highest performance.

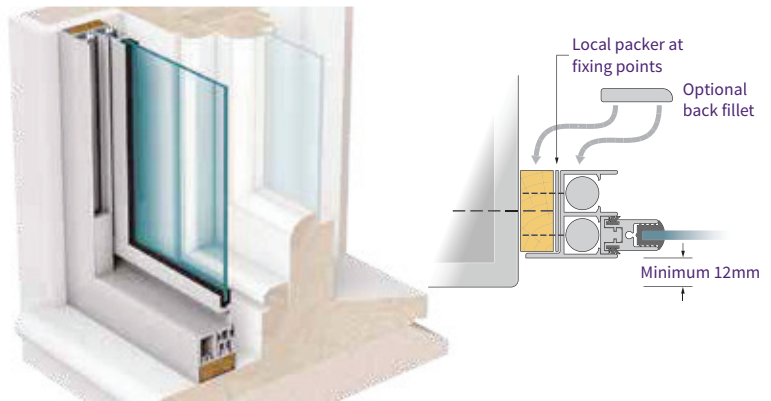
When larger section timbers or sill extensions are required, these are decorated on exposed room side surfaces in a close match to the frame colour. Typical fixing details are illustrated.

STANDARD SQUARE REVEAL FIX

- 33mm x 15mm twice primed softwood ground bedded in acrylic sealant and fixed to structure
- Odd leg frame with applied sealant is conceal fixed to ground
- Local hidden packers take up opening tolerance
- Optional caulking joint between frame and wall allows finished decoration

Guidance

- Set back minimum 12mm from face of plastered reveals to avoid blowing plasterwork
- Fixings for hinged units must penetrate into structure
- Enlarged timber grounds required when:
 - openings are very irregular
 - access needed for remote blind controls
- Optional back fillet available to conceal packing

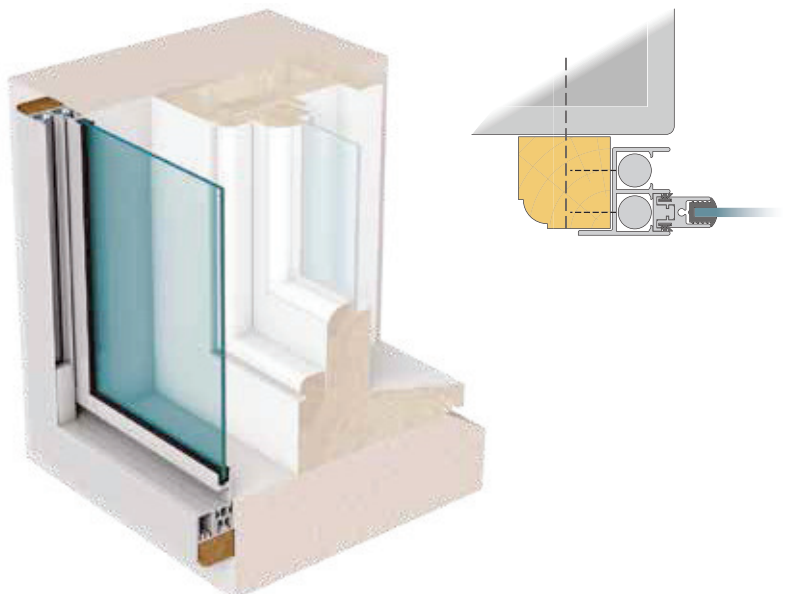


FACE FIX

- Softwood frame with minimum 38mm x 32mm section bedded in acrylic sealant and fixed to structure
- Optional moulding
- Odd leg frame with applied sealant is conceal fixed to timber

Guidance

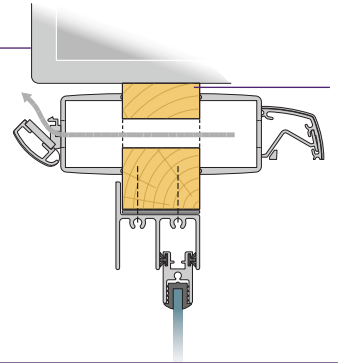
- Suitable detail where:
 - no reveal exists
 - where clearance is needed for inward opening windows
- Remote blind controls and ventilators cannot normally be accommodated



VENTILATORS

Approved Document F covers means of ventilation and applies to new build and major refurbishments. Ventilation is required to provide change of air and help reduce the damaging effects of condensation. It is normally sufficient to open internal secondary windows to provide this ventilation but sometimes permanent ventilation will be required using trickle ventilators in both the inner

and outer window – a minimum 5000mm² equivalent area in each Habitable rooms and 2500mm² equivalent area in each Wet room. These can be fitted within an enlarged timber sub-frame usually at the head of the secondary window. Properties being treated under statutory noise insulation schemes require acoustically dampened mechanical ventilation fitted through an external wall.

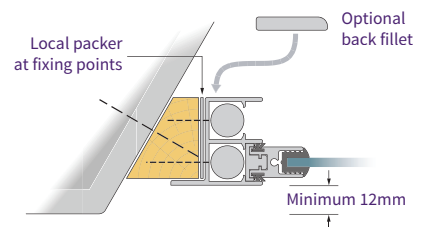
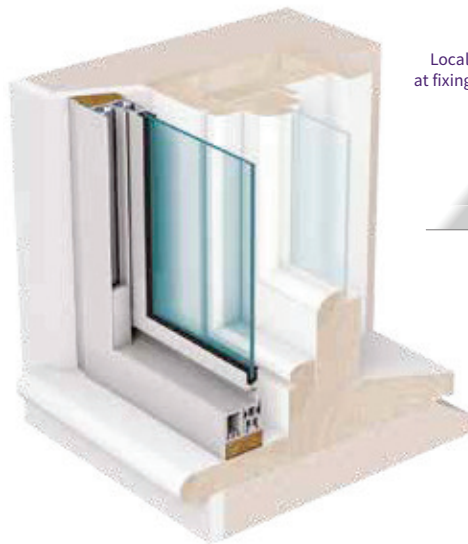


SPLAYED REVEAL FIX

- Softwood timber machined to match the splay
- Odd leg frame with applied sealant is conceal fixed to timber
- Local hidden packers take up opening tolerance

Guidance

- Set back minimum 12mm from face of plastered reveals to avoid blowing plasterwork
- When attaching to shutters ensure that these are securely fixed back and sealed beforehand
- Timber section can be sized to accommodate remote blind controls
- Optional back fillet available to conceal packing

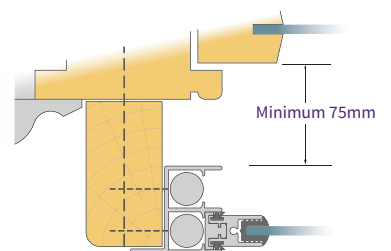


FLUSH BOX SASH

- Timber sized to provide a minimum 75mm clearance at meeting rail and fixed to box sash
- Optional moulding
- Odd leg frame with applied sealant is conceal fixed to timber

Guidance

- Minimum 75mm cavity applies to use of matching sash window system
- If a wider timber is specified the architrave can be resited to the face of the secondary window



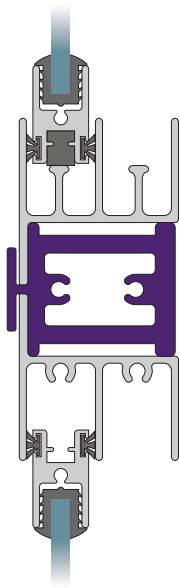
Coupling details

A range of versatile sections allows Series to be coupled together, either as a Transom (illustrated) when windows are stacked vertically or as a Mullion when they are coupled horizontally.

The 'H' feature on the face of the section holds the frame flange firmly in place ensuring a good seal and also acts to mask the effect of any shims needed during fixing.

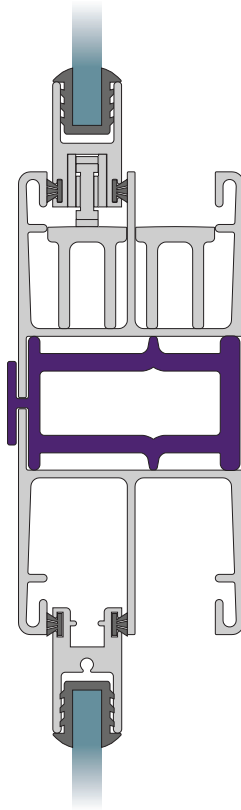
SLIMLINE

(Series 10 shown)



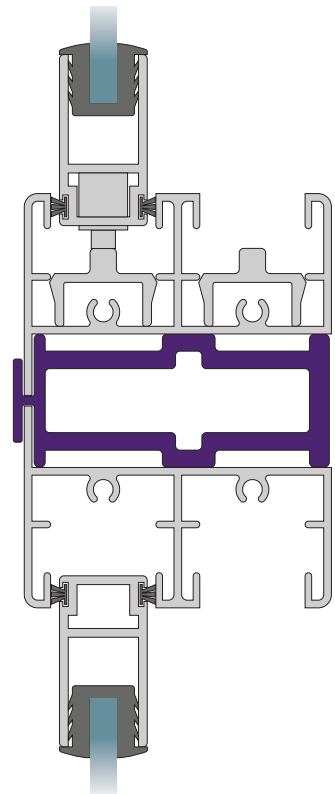
MID-RANGE

(Series 15 shown)



HEAVY DUTY

(Series 80 shown)



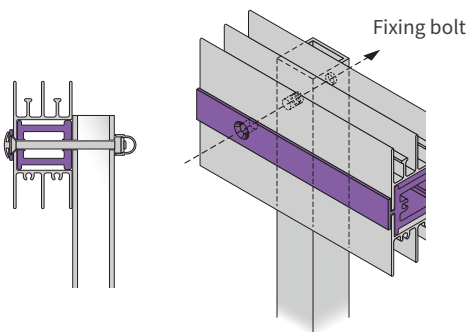
TRANSOM SUPPORT

Guidance

- Transom spans above 1.4m may require separate support
- Factors will include the upper window
 - style
 - size
 - glazing

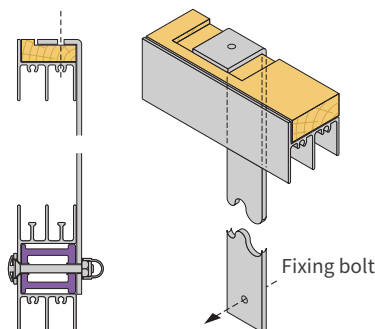
Standard method

- 25mm box section set behind interlock stile and bolted to transom.



Alternative method

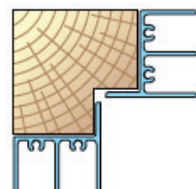
- 25mm flat bar hanger bolted to transom. This method is weight dependent.



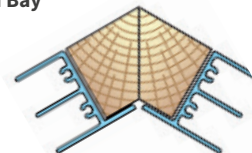
SHAPED COUPLING

- Patterned timber sections finished to complement frames
- Suitable for:
 - bay windows

Square Bay



Angled Bay



Performance tables

THERMAL – TYPICAL U-VALUES

		Timber primary + secondary unit 100mm cavity				Metal primary + secondary unit 100mm cavity			
Product		6mm	6mm low-E	4-12-4 SU low-E and gas	24mm enhanced thermal sealed unit	6mm	6mm low-E	4-12-4 SU low-E and gas	24mm enhanced thermal sealed unit
	S10 HS	2.629	1.807			2.911	1.936		
	S80 HS	2.640	1.810			2.920	1.940		
	S85 HS	2.700	1.840			3.000	1.970		
	S20 VS	2.617	1.802			2.897	1.930		
	S60 VS	2.639	1.812			2.924	1.942		
	S90 VS	2.615	1.801			2.894	1.929		
	S95 VS	2.698	1.840			2.996	1.974		
	S41 HC	2.581	1.785	1.627	1.27	2.852	1.910	1.731	1.34
	S45 HC	2.576	1.782			2.846	1.908		
	S50 HC	2.589	1.788	1.700	1.32	2.862	1.915	1.813	1.38
	S30 LO	2.585	1.787			2.858	1.913		
	S41 LO	2.581	1.785	1.627	1.27	2.852	1.910	1.731	1.34
	S45 LO	2.576	1.782			2.846	1.908		
	S40 FL	2.574	1.781	1.435	1.15	2.843	1.906	1.515	1.21
	S46 FL	2.579	1.784			2.850	1.910		
	S55 DFL	2.612	1.800			2.891	1.927		

These figures are calculated using modelling software by The Centre for Window and Cladding Technology (CWCT) at The University of Bath. All figures are in W/m²K.

Assumptions

1. The timber primary window has 6mm glass and a typical overall U-value of 4.71 W/m²K.
2. The metal primary window has 6mm glass and a typical overall U-value of 5.7 W/m²K.
3. The window size is 1480mm x 1230mm i.e. BFRFC (British Fenestration Rating Council) size.

Notes

1. The depth of cavity has a small effect

Example: Series 10 Horizontal Slider using low-e glass against a timber primary window

50mm cavity = 1.737

100mm cavity = 1.807

200mm cavity = 1.883

2. The proportion of aluminium to glass in the window has an effect

Example: Series 50 DSHC using Low-e sealed units with Gas

BFRFC standard size: 1480 x 1230 = 1.927

Large size: 3000 x 1500 = 1.733

Performance tables (continued)

ACOUSTIC – TYPICAL R_w dB VALUES WITH 150mm CAVITY

Primary glass thickness (mm)	Secondary glass thickness (mm)																		
		S10 HS	S80 HS	S85 HS	S20 VS	S60 VS	S90 VS	S95 VS	S41 HC	S45 HC	S50 HC	S30 LO	S41 LO	S40 FL	S46 FL	S55 DFL			
6	4mm toughened	45			45	46			47	47		44	47	47					
6	6mm toughened	45	46		45	46	46		47	47	46	44	47	47	47				
6	6.4mm	45	46		45	46	46		47	47		44	47	47					
6	6.4mm stadip silence	46	47		46	47	47		48	48		45	48	48					
6	6.8mm	46	47		46	47	47		48	48		45	48	48					
6	6.8mm stadip silence	46	47		46	47	47		48	48		45	48	48					
6	7.5mm		47				46	46	48		47		48	48			46		
6	8mm toughened		48				48		49				49	49					
6	8.8mm		48				48		49				49	49					
6	8.8mm stadip silence		48				48		49		48		49	49					
6	9.5mm		48	47			48	47	49		48		49	49			47		
6	10mm toughened		48				48		49				49	49					
6	10.8mm		49				48		50		49		50	50					
6	10.8mm stadip silence		49				48		50		49		50	50					
6	11.5mm		49	48			49	48	50		49		50	50			48		
6	12mm toughened		49				48		50				50	50					

A range of Selectaglaze products and specifications have been tested at the Taylor Woodrow Technology Centre. The results have then been interpreted by Hann Tucker Associates, consultants in Acoustics, to extrapolate and interpolate sound reduction values for the wider range.

Notes

R_w Correction Factors (based upon laboratory tested scenarios)

- Acoustic tiles on 3 sides with low spec glass +2dB
- Acoustic tiles on 3 sides with high spec glass +1dB
- Acoustic vent (4000 mm²) – open –2dB
- Trickle vent (4000 mm²) – open –3dB
- Trickle vent (8000 mm²) – open –5dB

The tested vent sizes predate the current Approved Document F which requires 5000mm² equivalent area in each Habitable room. The figures are therefore indicative of performance.

TYPICAL SECURITY RATINGS

Test Type	Test Standard	Rating Level																
			S10 HS	S15 HS	S80 HS	S85 HS	S20 VS	S25 VS	S90 VS	S95 VS	S41 HC	S45 HC	S50 HC	S40 FL	S42 FL	S46 FL	S43 DFL	S55 DFL
Physical Attack	PAS 24: 2016 SBD	Single Level			■			■	■		■	■		■	■	■		
	LPS 1175	SR1				■				■			■		■		■	■
		SR2											■		■		■	■
		SR3															■	■
Ballistic Attack	EN 1522	FB4 (Magnum handgun)																■
Blast Mitigation	ISO 16933	EXV 45	■				■									■		
		EXV 33		■	■			■	■		■	■						
		EXV 25				■				■			■		■		■	■
		EXV19											■					
		EXV 15											■					■
Fire Resistance	BS EN 1363-1/1364-1	30 minute integrity (E30)												■				

Notes

- PAS 24: 2016 Products are subjected to static loads on the frames up to 3KN followed by manual intervention using a range of tools but without breaking the glass.
- LPS 1175 security ratings are based on defined tool sets for each level, a maximum work time and a total period allowed which covers assessment, change of tools and rest (refer to www.redbooklive.com for more information).

Security rating	Tool category	Maximum work time (mins)	Maximum test duration (mins)
SR1	A	1	10
SR2	B	3	15
SR3	C	5	20

- Products are blast tested against 100kg TNT equivalent with targets set at prescribed distances:

EXV45 – 45m stand off
EXV33 – 33m stand off
EXV25 – 25m stand off
EXV19 – 19m stand off
EXV15 – 15m stand off

- FB4 provides protection against a .44 Magnum Hand Gun

- Fire Protection

Fire glass can be rated for *Integrity* and *Insulation*. Selectaglaze product is rated for *Integrity* only.

Integrity period: this is the time that the glass remains in its frame and maintains its function of blocking flame and smoke. The classification is E and E30 denotes 30 minutes integrity

Insulation period: this is the time that the glass limits the temperature rise on the non-fire side by an average not exceeding 140° or 180° in any one position. The classification is I and EI 60/30 denotes 60 minutes integrity and 30 minutes insulation.

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