

SELECTAGLAZE™


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

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SELECTAGLAZE

window protection systems

Bomb Blast Physical Attack
Fire Resistance Ballistic Assault



Enhanced Window Security Using Secondary Glazing Systems



Windows are the eyes of a building and one of the elements most vulnerable to attack whether from forced entry, blast, fire or even ballistics. Most window frames offer little resistance to forced entry and standard building glass will readily shatter under attack from an intruder or an explosive device.

Purpose made secondary windows installed independently to the inside of the existing window frame can provide enhanced protection whether to a single vulnerable window or to a complete building. Protection is available from simple low level deterrence to significant resistance against a determined attack.

Secondary Windows are designed to complement the external window style, are discrete to avoid drawing attention to the protection offered and can usually be installed with little disturbance to the fabric of the building or to the occupants.

Other key benefits of Secondary Glazing include high levels of acoustic insulation and much improved thermal insulation leading to better working and living environments and reduced energy demands.

Selectaglaze has been a leading specialist in Secondary Glazing for over 40 years working with a very diverse range of clients. The product range has continuously evolved to meet changing needs.



Security Applications include:

Airports, Banks, Computer Rooms, Control Rooms, Embassies, Government Buildings, Private Homes, Hospitals, Laboratories, Museums, Schools, Transport Links, Telecommunications and Utilities

Tried, Tested & Approved

When people's safety is at stake or when property has to be safeguarded it is essential that products offering protection are suitably tested and certified. Selectaglaze submits products to a variety of test houses.

Physical attack

Standard: BS 7950 'Specification for enhanced security performance of casement and tilt/turn windows for domestic applications'



www.securedbydesign.com

This test simulates forced entry through static loading and manipulation of the window frame, locks and glazing using simple tools. The test does not involve glass breakage and so replicates a stealth attack.

"Secured by Design" is a crime prevention initiative promoted by The Association of Chief Police Officers (ACPO). BS 7950 is regarded as a minimum test standard for ground floor windows or those easily accessed. The standard can equally be applied to commercial premises.



Standard: LPS1175 'Specification for testing and classifying the burglary resistance of building components, strong-points and security enclosures.'



Set by the Loss Prevention Certification Board (LPCB), standard LPS1175 deals with elements on the building façade such as doors, windows, shutters and grilles. There are six levels of resistance measured in terms of the attack tools and the time available to the attacker. In the case of a window both the frame and glass are attacked. It therefore replicates a determined attack in which noise doesn't matter. The rigorous tests are carried out at The Building Research Establishment and certified products are regularly audited to ensure that they continue to comply with the standard. Certified products appear in the Red Book, a world renowned listing used by anyone who needs to manage risk.

Ballistic Attack

Standard: EN 1522 / 1523 'Windows, doors, shutters and blinds. Bullet resistance. Requirements and classification / Windows, doors, shutters and blinds. Bullet resistance. Test method'



The standard has nine levels of certification covering handguns, rifles and shotguns.



Selectaglaze product is tested by Wiltshire Ballistic Services.

Blast protection

Standard: ISO / DIS 16933

'Glass in Buildings – Explosion resistant security glazing – Test and classification for arena air blast loading.'



This standard tests the effect of explosive devices of different sizes from small packages to a vehicle bomb at various distances from the target. Most building elements are tested against a vehicle bomb at set distances or stand-offs starting at 45m (rating EXV45) reducing to 33, 25, 19, 15, 12 and 10m (rating EXV10).

Tests are conducted at Advantica's Spadeadam site, a world leading centre for trials involving the use of high explosives.



Fire Protection

Standard: BSEN 1363-1, 1364-1

'Fire resistance tests. General requirements / Fire resistance tests for non-load bearing elements. Walls'



Samples are built into a frame mounted to the front of a furnace. The temperature is raised in a controlled manner until all combustible material in the chamber has ignited and the sample continues to be tested for the specified period of time.

Selectaglaze product is tested by Chiltern International Fire.



selectaglaze
window protection systems

Physical Attack

The choice of secondary window will be dependent on the assessed risks and Selectaglaze products can offer protection at a number of levels.

Low Risk

This guards against an opportunistic attack by a thief who wants to move quickly and with the minimum chance of detection. Although there are no test standards at this level, a simple secondary window incorporating a lock and toughened or laminated safety glass acts as a deterrent by creating an additional barrier to entry that is both visual and physical.

Medium Risk

This covers a more determined attack. The thief will be prepared to spend more time attacking the frame but may not break the glass as this will attract attention. The window frames and locks need to be robust, tested to Standard BS7950 and, for peace of mind, accredited to "Secured by Design". This Standard does not cover the glass but Selectaglaze recommends a minimum 6.8mm laminated glass tested to BS6206 Class A. If the risk of glass breakage is higher, Anti-Bandit laminated glass tested to BS 5544 or BSEN 356 should be considered. There is a choice of 7.5mm, 9.5mm and 11.5mm 3-ply laminates or, for optimum protection at this level, 11.3mm 5-ply laminated glass.

High Risk

The building is a known risk and any attack will be planned and very aggressive. Both the frame and glass will come under determined attack with a range of tools.

Products should be specified that are certified to the LPS1175 standard and listed in **The Red Book**. The standard has a number of increasingly challenging test levels. Tools for Level 1 include a screwdriver, lever, pliers and knife and the test duration is 10 minutes with an actual attack time of 1 minute. This rises to a 20 minute test time and 5 minutes attack time at Level 3 with tools such as a claw hammer, small axe, battery drill and a 700mm long crowbar. Frames must be very strong with significant locking to opening panels and specialist laminated glass will be required.

These certified products can be used in place of security grilles, gates and bars providing peace of mind without the visual intrusion.

Ballistic Attack

Traditional ballistic protection has been provided by multiple panels of glass laminated together with pvb interlayers. The resultant material is both thick and heavy and needs large supporting frames. Thinner and lighter panes can be produced by laminating layers of glass with polycarbonate sheeting. This allows the design of smaller more easily handled frames making it the preferred material for retrofitted secondary glazing. To ensure continuous protection Selectaglaze ballistic windows consist of demountable fixed panels which are attached by removable fixings to permanently anchored frames. This design allows for planned maintenance.

Protection is offered against the most powerful handguns.





Blast Protection

Against a bomb blast standard annealed glass is likely to shatter even 100m away and flying shards of glass can lead to many casualties. Whilst the majority of buildings will not be direct targets, the vulnerability of glass at such a large distance demands that building owners or managers give serious consideration to glass containment in the event of a blast.

Low Risk

The building is unlikely to be a direct target but if it has commercial or public use there exists a duty of care and glass should be protected.

Conventional secondary windows glazed with 6.8mm class 'A' laminated glass will provide an effective barrier against a vehicle bomb detonated 40-45m away. The laminate glass incorporates a thin plastic (pvb) sheet which will stretch under the blast load and hold the glass together. Protection offered by secondary glazing is particularly relevant for small pane windows or lead lights.

Medium Risk

The building is unlikely to be a direct target but is close to more sensitive buildings.

The secondary windows can still incorporate 6.8mm laminated glass but the frames, locks and fixings will be more robust and offer protection at a distance of 30-33m from a vehicle bomb.

High Risk

The building is a potential direct target on account of usage or ownership.

These buildings may require a number of protective strategies in addition to enhancement of the glazing. The laminate glass will have a minimum 1.5mm thick pvb interlayer and 7.5mm, 9.5mm or 11.5mm glass are commonly specified. This thicker material stretches further before tearing and can withstand a vehicle bomb detonating 20 -25m away. The secondary window frames and locks need special features to cope with the blast loads. Glazing rebates will vary between 20mm and 35mm and in some cases the glass will be bonded to the frame. Secure anchors are needed to tie the frame back to the building structure and in cases where the wall is unable to take the blast loads supporting steel frames will have to be introduced spanning the floors.



Fire Resistance

Secondary Glazing is often required in areas which require fire resistant glazing such as windows adjacent to a fire escape. In order to maintain design continuity with secondary glazing elsewhere in the building aluminium sections need to be considered. However a fully developed fire achieves temperatures above the melting point of aluminium. The use of a specially adapted fixed frame glazed with Pilkington Pyrodur™ glass in conjunction with fire rated mastics and intumescent seals offers a half hour fire rated product. The design allows large windows to be treated.

Where one hour protection is required purpose designed steel sections are specified.

High Security Range

Series 40 - FIXED (FIRE RATED)

Application

- Windows adjacent to fire exits

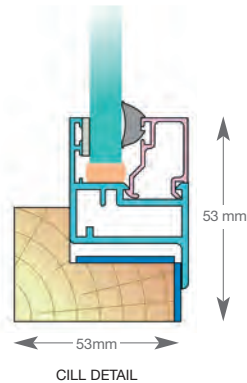
Features

- Intumescent seals
- Rebated softwood subframe
- Pilkington 10mm Pyrodur™ glass
- Fireglaze mastic

Size Guidelines*

Minimum panel -
600mm x 600mm

Maximum panel -
2800mm x 1500mm



Series 50 - HINGED CASEMENT

Application

- Treatment of single windows requiring frequent access

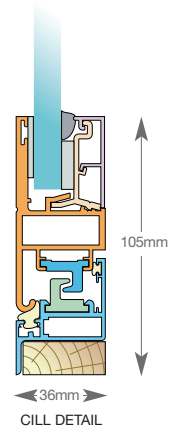
Features

- Anchored bead system
- Bonded glazing
- Flush hinges concealed from attack side
- Multiple locking to 3 sides
- Lockable handle

Size Guidelines*

Minimum -
Height 600mm, Width 500mm

Maximum -
Height 2800mm, Width 1500mm



Series 50 - FIXED

Application

- Vision Panels within secure partitions
- Treatment of windows requiring no access

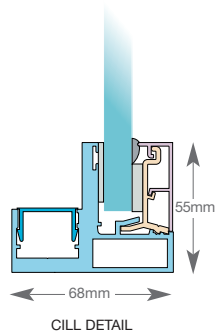
Features

- Anchored bead system
- Bonded glazing
- Secure fixing channel

Size Guidelines*

Minimum panel -
400mm x 400mm

Maximum panel -
2800mm x 1500mm



Series 85 - HORIZONTAL SLIDING

Application

- Secure reception windows
- Treatment of multiple window openings

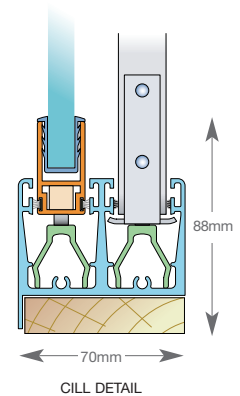
Features

- Passive sash locking with anti-jemmy feature
- Sash anchors
- Central multipoint locking with key lock
- Sashes run on stainless steel ballraces

Size Guidelines*

Minimum -
Height 600mm, Width 1200mm

Maximum -
Height 2600mm, Width 3000mm



Series 55 - DEMOUNTABLE FIXED

Application

- Treatment of windows requiring occasional access for maintenance

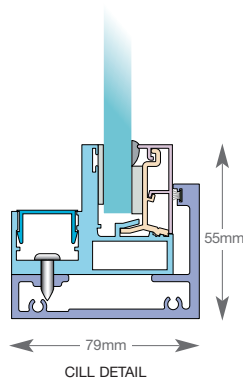
Features

- Permanently secured subframe - reveal or face fixed
- Demountable glazed panel - single or multiple
- Anchored bead system
- Bonded glazing

Size Guidelines*

Minimum panel -
400mm x 400mm

Maximum panel -
2800mm x 1500mm



Series 95 - VERTICAL SLIDING

Application

- Treatment of sash windows
- Secure reception windows

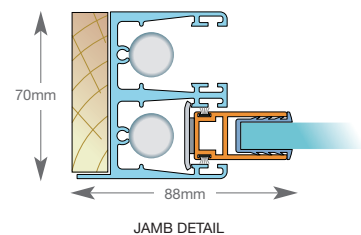
Features

- Passive sash locking with anti-jemmy feature
- Sash anchors
- Central multipoint locking with key lock
- Pre tensioned Torso spring balances

Size Guidelines*






Minimum - Height 1300mm
Width 700mm

Maximum - Height 3600mm
Width 1600mm



**Size guidelines show frame capability but actual sizes will be dictated by the specific application, glass composition and handling considerations.*

Full Product Ratings

Test Standard	Rating	Horizontal Sliding 	Vertical Sliding 	Hinged 	Fixed 	Demountable fixed 	Product	Glass options <i>(all dimensions in mm)</i>
Blast ISO/DIS 16933	EXV45	X					S10 2HS	} 6.8
			X				S20 VSCB	
				X			S45 SHC	
					X		S45 CFL	
						X	S46 CFL	
Blast ISO/DIS 16933	EXV33	X					S80 2HS	} 6.8
			X				S90 VSCB	
				X			S40 SHC	
					X		S40 CFL	
Blast ISO/DIS 16933	EXV25	X					S85 2HS	} 9.5T / 11.5T
			X				S95 VSCB	
				X			S50 SHC	
					X		S50 CFL	} 9.5 / 11.5
						X	S55 DFL	
Physical BS 7950	Single rating			X			S45 SHC	} 6.8
					X		S45 CFL	
					X		S46 CFL	
		X					S80 2HS	} 6.8 7.5, 9.5, 11.5 11.3
			X				S90 VSCB	
				X			S40 SHC	
				X			S50 SHC	
				X		S40 CFL		
Physical LPS 1175	SR1	X					S85 2HS	} 12.04
			X				S95 VSCB	
				X			S50 SHC	
					X		S50 CFL	
						X	S55 DFL	
Physical LPS 1175	SR2	X					S85 2HS	} 12 Tego 12.4 GPG
			X				S95 VSCB	
				X			S50 SHC	
					X		S50 CFL	
						X	S55 DFL	
Physical LPS 1175	SR3					X	S55 DFL	12 Tego
Ballistic EN 1522 EN 1523	FB4					X	S55 DFL	22 GP
Fire BSEN 1363-1 BSEN 1364-1	30 minute integrity				X		S40 CFL	10 Pyrodur™

Notes:

- Blast ratings against 100Kg TNT equivalent
EXV45 – low hazard at 45m EXV33 – low hazard at 33m EXV25 – low hazard at 25m
- Ballistic FB4 rating provides protection against .357 or .44 Magnum
- Glass Options** All glass options are laminated
'T' denotes toughened laminate; **Tego** – specialist laminate – glass / polycarbonate. Glass face to room;
GPG – specialist laminate - glass / polycarbonate / glass; **GP** – specialist multi laminate – glass / polycarbonate;
Pyrodur™ – Pilkington fire glass
- Refer to Selectaglaze Product Guide for details of Series 10,20,30,40,45,46,80 and 90 ranges

All tests are conducted on stand alone secondary windows. The existing primary window will therefore provide some additional protection against blast or physical attack.

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Uniclass	EPIC		
L413:N544	D172:Y44		

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A Member of the
Glass and Glazing Federation