



Aluminium Window

Series S2 energy **s**aving | **S6 e**nergy **s**aving



The aluminum windows of the series S2 energy saving and S6 energy saving are durable, corrosion resistant and low-maintenance. They provide security to the highest resistance classes and are characterized by excellent thermal insulation.



High security windows installed in an Embassy.

Aluminium Window

Maximum Security, Variety and Elegance

Advantages at a Glance

- Combinable with all products of the **SYSTEM SÄLZER®** (facades, doors, gates, guard houses etc.).
- Combined protection against forced entry, bullets and explosion.
- Optimal thermal insulation.
- Variety of designs.
- Aesthetic design.
- Available as single element or as component of a facade.
- High mechanical load and durability.
- Extensive supplementary equipment, such as glass breakage detector, magnetic contact or louvre.



Combination of different window variations incl. aluminium door.



Ballistic test of the window series **S6 energy Saving**: French window casement was shot with a Magnum Cal 357 and a Rem. Magnum Cal 44 (level: FB4/BR4-NS).



Shock tube test: a window series **S6 energy Saving** was tested with a positive peak pressure of 50 kPa (0.5 bar) over 1 second.



Forced entry test, resistance level RC4.

Often simultaneous protection against forced entry, bullets and / or explosion is required. Exactly for these combined requirements the SÄLZER aluminum windows provide the ideal solution.

The windows of the series **S6 energy Saving**, for example, are **forced entry resistant in the level RC4** and offer as well as **bullet resistance in level FB4-NS**. Furthermore **the windows withstand a pressure of 880 kPa|8.8 bar and are resistant against cyclones**.

S2 energy Saving | S6 energy Saving

Both series provide combined Security

Security levels

Bullet resistance

Series S2 energy Saving up to FB7-NS (rifle).

Series S6 energy Saving up to FB4-NS (handgun).

Forced entry resistance

Series S2 energy Saving up to RC5

Series S6 energy Saving up to RC4

Blast resistance

Both series offer the same levels of protection:

High protection against terrorist bomb attacks and accidents in the manufacturing and storage of explosives. Tested in various open range tests, up to a reflected pressure of 880 kPa | 8.8 bar, (very high pressure | lower pressure duration). Furthermore tested at the shock tube up to a reflected pressure of 249 kPa|2,49 bar. Additional: high security against shock waves with long duration, as in the petrochemical industry, resistance up to 2 sec (long duration pressure | low pressure)*.

Resistant against cyclones

Tested according to the Australian standard for structural design against wind actions AS/NZS 1170:2:2011 and according to the technical note no.4 by the James Cook University Australia*.



No design restrictions for the architects and builders - customized security solutions.

* please have a look at page 7



The SÄLZER security windows were manufactured according to heritage building. Historic design and modern technology "invisible security".



Blast-resistant windows in a petro-chemical facility (petro-chemical).



SÄLZER security window installed in an embassy in Asia.



Security window seamlessly integrated into a security curtain wall.



Aluminum window installed as a secondary window inside an office in Frankfurt.

Modern, elegant, historic or just functional, definitely "safe"!

The security is the same, whether exact replica of historical elements, windows for robust use in industrial and military buildings or elegant designs for embassies or private homes.

Individuality

The SÄLZER aluminium profile system permits various constructions for individual requirements - whether modern or historical style.

Creativity

SÄLZER has tested many design variations: single and multiple window elements, available with turn, tilt or tilt-turn window hardware, sliding element, french casement window, continuous windows, with top and side lights, or as round-arched window.

Conception

Uniform appearance of the whole building with SÄLZER products. The window can be built in facades and are available as single units. Windows and doors are compatible because of the same profile depth.

Surface Diversity

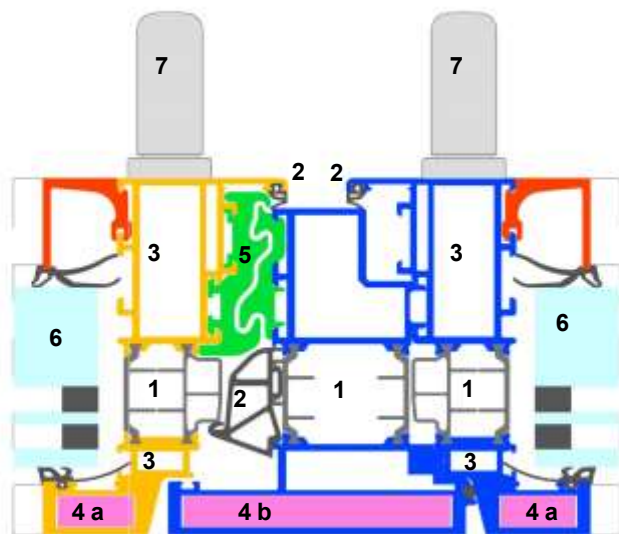
Anodized or powder coated, also clad with different materials such as stainless steel, stone, bronze, various and different types of wood.

Elegance

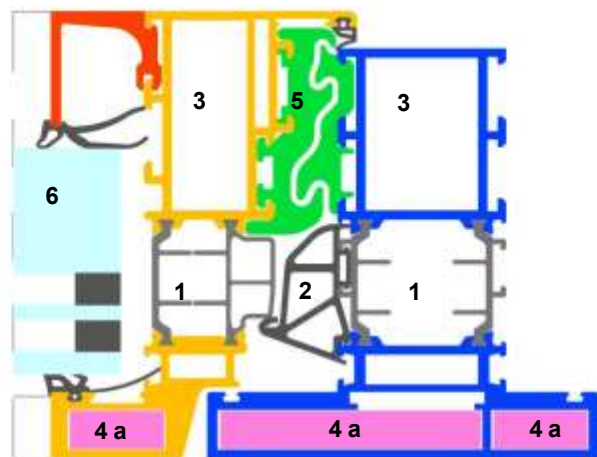
Despite high security narrow profile widths of the wing of 35 mm (**Series S6es**). No visible screwing of the glazing

Innovative Security Technologies

Provide Protection and ensure Stability and Durability



Horizontal section of a S6 energy saving French casement



Horizontal section of a S6 energy saving , right, left, above

Explanation: section details of profiles series S6 Energy Saving

- 1 **Glass fibre reinforced POLYAMIDE-bridges**, ensure stability and high thermal insulation.
- 2 **Stop and central rebate gasket with multiple chambers** provide high air and water tightness.
- 3 **Extruded and massive corner cleats and connectors** (glued and screwed) in the profiles ensure stiff and torsion-resistant corner joints.
- 4a Depending on requirements, either produced of **solid material**, e.g. for round-arched windows, or designed as **hollow chamber**.
- 4b **Reinforcements** in the hollow areas of the French casement window profile create the necessary variable forced entry, bullet and blast resistance.
- 5 **Patented 4-sided surrounding interlocking system SAELOX[®]** consists of solid extruded aluminium and secures reliable against forced entry and blast. Interlockings are not only connected with the push rod, they are also adjustable fixed in an additional push rod, with twice enlarged cross-section and a double hook system. Only a few locks are necessary which are adjustable at any time.
- 6 Due to the high **profile depth triple glazing and bullet resistant glazing** can be integrated.
- 7 For **high sash weights** designed hardware: turn windows up to 300 kg, tilt windows and tilt-turn windows up to 200 kg.

Special variant window **SECURON[®]** security in tilted window position: forced entry resistant up to RC3 and blast resistant up to 100 kPa pressure

Protection against forced entry and explosion are also possible in tilted window position at SÄLZER. The patented technology is realized by special security scissors and locks. Available as single or double sash window. For more information, see the separate brochure **SECURON[®] window**.

Characteristics		Series S2es	Series S6es
Security	Standard	Level	Level
Forced entry resistance	According to DIN EN 1627-1630 Glazing according to DIN EN 356	RC5 : test of the glass and frame according to DIN EN 1627-1630.	Up to RC4* Up to P8B
Bullet resistance	According to DIN EN 1522-1523 Glazing according to DIN EN 1063	Up to FB7-NS* Up to BR7-NS	Up to FB4-NS* Up to BR4-NS
Blast resistance	According to DIN EN 13123 and according to customer requirements, e.g. tested with 100 kg + 500 kg explosive. Glazing according to SÄLZER make up.	Up to EXR3-S* 84 kPa - 880 kPa bar reflected pressure (field test*), GSA2 Different tests at the shock tube*, positive peak pressures from 50 kPa to 249 kPa, GSA 2 Long term pressure tests: positive peak pressure of 50 kPa and a test duration > 1 s, GSA 2	
Resistance against cyclones	Tested according to the Australian standard for structural design against wind actions AS/NZS 1170:2:2011 and according to the technical note no.4 by the James Cook University Australia		The element was tested with: hard wood timber member of 4 kg mass with a nominal cross section of 100mm x 50mm impacting end on at 39.6m/s (143 km/h) and spherical steel ball 8mm diameter (approx. 2g mass) impacting at 39.6m/s (143 km/h)
Performance Characteristics according to DIN EN 14351			
Resistance against wind load	According to DIN EN 12210	Depending on the type up to class C5	Depending on the type up to class C5
Water tightness	According to DIN EN 12208	Depending on the type class 8A up to E750 (pressure load: 750 Pascal)	Depending on the type class 8A up to E750 (pressure load: 750 Pascal)
Air permeability	According to DIN EN 12207	Depending on the type up to class 4	Depending on the type up to class 4
Impact resistance	According to DIN EN 13049	Depending on the type up to class 5	Depending on the type up to class 5
Thermal insulation	According to DIN EN ISO 10077-2 Values vary depending on the element size and glazing	$U_w = 0.9$ up to 1.7 W/m ² K	$U_w = 0.9$ up to 1.7 W/m ² K
Sound insulation	Values vary depending on the element size and glazing	According to DIN 52210; up to R_w 45 dB	According ISO 140-3; up to R_w 45 dB
Life cycle	According to DIN EN 12400	Details on request due to vary security components and weights.	Class 2 Tilt hardware: 20,000 open-close cycle Turn hardware: 10,000 open-close cycle
Sizes Glazing Hardware Design			
Profile depth	Depending on the security level	Frame: 135 mm Wing: 145 mm	Frame : 115 mm Wing: 125 mm
Glazing	Security class of the glazing is the same resistance level as the complex construction.	Fixed light: 97 mm Openable windows: 102 mm	Glass thickness up to 90 mm with flush glazing beads.
Profile widths	Despite high security components small profile widths e.g. sash profile width of the series S6es up to 35 mm (inside dimensions).		
Glazing bead	There is no visible screwing of the glazing bead required due to the stable design. Also no glueing necessary (natural glazing rebate ventilation and water circuit) . Glazing beads are anchored pressure and impact resistant in the slot of the profiles.		
Height	Minimum and maximum wing dimensions, depending on the desired level of security.		
Design	Single and multiple window elements, available with turn, tilt or tilt-turn window hardware, sliding element, french casement window (series S6es), continuous window, with top and side lights, or as round-arched window.		
Hardware wing weights	Hardware for heavy weights. Weights: turn hardware up to 300 kg, tilt hardware and tilt-turn hardware up to 200 kg.		
Installation	Installation in several building materials permitted. Bullet resistance: a bullet resistant wall connection is tested and recommended.		

* higher requirements upon request.

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SYSTEM SÄLZER®

Combined Protection

For more than 40 years SÄLZER has led the industry in the development and technology of forced entry, bullet, fire and blast resistant building components. Each of our products is subject to a strict internal and external quality management. Research and development are the driving force behind SÄLZER.

Please ask for additional brochures about our further products:

- windows and facades
- doors and gates
- guard houses
- partition walls and access control
- barriers and bollards
- accessory components etc.

Spectacular test videos:

[youtube.com/user/saelzersecurity](https://www.youtube.com/user/saelzersecurity)



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