

SGG CLIMAPLUS® SAFE
SGG CLIMAPLUS® PROTECT

*Safety insulation
glazing*



*The sign of functional
insulation glass
produced by experts*



SGG CLIMAPLUS® SAFE SGG CLIMAPLUS® PROTECT

Glass which offers protection against injury and break-ins



Glass which protects against injury in the event of breakage.

Protection is offered wherever there is a high risk of glass breaking or where this could have particularly serious consequences, for example with overhead glazing, where falling glass could cause severe injuries, parapet glazing, where glass breakage could put lives at risk, or glazing with a large surface area, especially where children live and play.



Glass which also protects against break-ins and attacks.

The use of glazing to protect against break-ins and attacks is now not only standard in “high security areas”, such as banks and shops with expensive goods on display, but also in high-quality homes, especially detached homes.



Glass which protects and prevents damage to the environment.

Safety glass must also provide thermal insulation, and this is of course a feature of all SGG CLIMAPLUS products. The comprehensive range offers a suitable product for every application, and the necessary features for protecting against injury and break-ins can be combined for all-round safety and security.

SGG CLIMAPLUS SAFE/PROTECT

Safety and thermal insulation

SGG CLIMAPLUS SAFE safety and insulation glass combines excellent thermal insulation with protection against injury in the event of breakage.

Thermal insulation is provided by an invisible special coating of precious metal with a high insulation effect on one pane of glass, and a cavity filling of inert gas to produce U_g -values of just $1.1 \text{ W/m}^2\text{K}^*$. These values easily meet the requirements of the new energy saving regulations.

In addition one of the two panes consists of high-quality safety glass: either toughened glass, used for example with large glazed areas, or laminated safety glass, used for example in overhead glazing.

SGG CLIMAPLUS PROTECT is safety insulation glass for protecting property. This is becoming ever more necessary, as statistics show that a break-in occurs every two minutes in Germany, requiring increased levels of public and private security.



By no means all burglars are professionals: they are opportunists relying on householders' negligence and inadequate security measures. Such amateur crooks will soon give up if the security put in place prevents easy access to the house. SGG CLIMAPLUS PROTECT allows you to block their favourite way in – through a window, front or back door or a balcony door.

This insulation glass, acting as a deterrent to burglars, slows your unwelcome guests until they become fearful of detection and give up. The glass of course also meets the legal requirements regarding thermal insulation.

* Calculated values:
test results for U-values are even lower.

Safety and security combined with thermal insulation:

SGG CLIMAPLUS SAFE
U_g-value of just $1.1 \text{ W/m}^2\text{K}^*$
SGG CLIMAPLUS PROTECT
U_g-value of just $1.1 \text{ W/m}^2\text{K}^*$

SGG CLIMAPLUS SAFE Protection if glass breaks



... or laminated safety glass

SGG STADIP laminated safety glass consists of two panes, inseparably joined with a clear, extremely tear-resistant laminating foil. If the glass breaks the fragments remain attached to the foil, and the glass remains in its frame.

This glass is therefore ideal for transparent thermal insulation in inclined or overhead glazing applications, as the foil holds the glass together, so that in the event of breakage there is no risk of falling glass or splinters.

With toughened glass ...

When manufacturing SGG SECURIT, the glass is heated and then rapidly cooled, making it capable of high loading while increasing its bending and failure strengths. Should it break under extreme load, it produces small fragments with blunt edges, with practically no risk of injury.

SGG CLIMAPLUS SAFE with SGG SECURIT is ideal wherever glass is subjected to high loading, for example in large glass walls, where the wind causes bending, or glazing for roof gardens. This glass is also resistant to the impact of footballs, for example, and can therefore safely be used in many kinds of sports facilities.



Illustration of construction and breakage of toughened glass

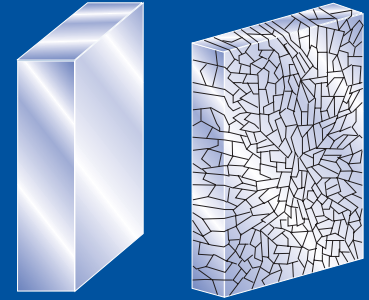
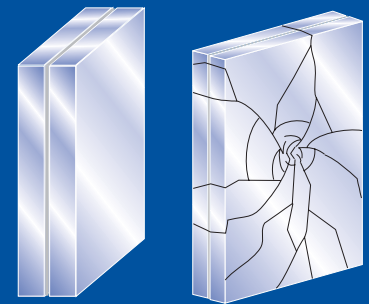


Illustration of construction and breakage of laminated safety glass



Technical data for SGG CLIMAPLUS N SAFE

Type*	Element-thickness in mm	U _g value in W/m ² K in acc. with DIN EN 673	g value in % in acc. with DIN EN 410	τ _v
SGG CLIMAPLUS® N SAFE 6 STADIP/4	25 (26)	1,2	58 %	77 %
SGG CLIMAPLUS® N SAFE 6 STADIP/6	27 (28)	1,2	57 %	77 %
SGG CLIMAPLUS® N SAFE 6/8 STADIP	29 (30)	1,2	59 %	74 %
SGG CLIMAPLUS® N SAFE 6 SECURIT/6	27 (28)	1,2	60 %	77 %
SGG CLIMAPLUS® N SAFE 8 SECURIT/8	31 (32)	1,2	58 %	75 %

* All units are available as SGG CLIMAPLUS ULTRA SAFE with even better thermal insulation.

** SGG STADIP meets the requirements for overhead glazing using toughened glass or lower-level insulation glass contained in the "Technical Rules for the Use of Linear Supported Glazing" formulated by the Berlin-based German Institute for Structural Engineering.

SGG CLIMAPLUS SAFE Safe means safe!

SGG SECURIT is extremely resistant to bending and failure. Under extreme loading it breaks into small fragments with blunt edges.

SGG STADIP laminated safety glass contains a PVB foil, allowing it to be used for overhead glazing.**

SGG CLIMAPLUS PROTECT

Protection against break-ins

Security with laminated safety glass ...

SGG CLIMAPLUS PROTECT has an external pane consisting of SGG STADIP PROTECT glass. This particularly effective form of laminated safety glass consists of two or more panes securely joined using a clear, extremely tear-resistant laminating foil to produce a highly resistant join.

The resistance offered by SGG STADIP PROTECT increases with the number of panes laminated using the foil. The effectiveness of the glass can be increased from simple protection against breakage to deliberate smashing or gunshots, up to protection against explosions.

... in four standard classes

SGG CLIMAPLUS PROTECT is available in differing security classes for various applications to ensure maximum security for each need.

- SGG CLIMAPLUS PROTECT P-A resists deliberate breakage in accordance with standard DIN EN 356 A
- SGG CLIMAPLUS PROTECT P-B resists deliberate smashing in accordance with standard DIN EN 356 B
- SGG CLIMAPLUS PROTECT BR resists gunshots in accordance with standard DIN EN 1063
- SGG CLIMAPLUS PROTECT D resists explosions in accordance with standard EN 13541

These classes of resistance are further subdivided (P1A – P5A, P6B – P8B, etc.).

Security – and more

SGG CLIMAPLUS PROTECT insulation glazing can if necessary be extended to perform other functions. Combinations are for example possible with

- SGG CLIMAPLUS ACOUSTIC / SILENCE for noise protection
- SGG CLIMAPLUS SOLAR CONTROL for solar control
- SGG CONTRAFLAM for fire protection



All SGG CLIMAPLUS PROTECT glazing types are tested to current European standards by official testing agencies.

Technical data for SGG CLIMAPLUS N PROTECT (examples)

Type	10 mm cavity		16 mm cavity		Resistance class
	Element thickness in mm	U _g value in W/m ² K in acc. with DIN EN 673	Element thickness in mm	U _g value in W/m ² K in acc. with DIN EN 673	
SGG CLIMAPLUS® N PROTECT CP 107	21	1,5	27	1,2	P1A
SGG CLIMAPLUS® N PROTECT CP 209	23	1,5	29	1,2	P2A
SGG CLIMAPLUS® N PROTECT CP 309	23	1,5	29	1,2	P3A
SGG CLIMAPLUS® N PROTECT CP 410	24	1,5	30	1,2	P4A
SGG CLIMAPLUS® N PROTECT CP-SP 510	24	1,5	30	1,2	P5A
SGG CLIMAPLUS® N PROTECT CP-SP 618	32	1,5	38	1,2	P6B
SGG CLIMAPLUS® N PROTECT CP-SP 724	39	1,5	45	1,2	P7B
SGG CLIMAPLUS® N PROTECT CP-CP 827	41	1,5	47	1,2	P8B

For further information refer to the SGG STADIP PROTECT prospectus.

Glass for your security

What level of protection should a building have?

Resistance classes P1A to P6B are normally sufficient for the protection of private homes. These types of glass are resistant to deliberate impact or breakage, i.e. they hinder or prevent any attempt to break or smash through the glass.

The list below summarises the main classes of protection and is intended to help you make your choice:

- **P1A:** lowest level of security – protection against vandalism
- **P2A:** single and multiple-occupancy family housing in residential areas
- **P3A:** detached houses
- **P4A:** high security – holiday and weekend homes
- **P5A:** exclusive residences
- **P6A:** particularly high-value residences with luxury furnishings

Commercial premises often require higher security arrangements. Class P-B SGG CLIMAPLUS PROTECT glazing is ideal in these situations, with P7B for museums, galleries and antique shops, and P8B for jewellers, furriers and IT facilities.

What can this glass do?

A few figures should be enough to indicate the excellent protection offered by SGG CLIMAPLUS PROTECT:

- SGG CLIMAPLUS PROTECT glass, Class P-A, is resistant to impact: it can withstand the impact of a 4 kg steel ball dropped three times from a height of up to 9.5 m (nine times for P5A).
- The resistance to impact of Class P-B means that up to seventy blows from a 2 kg axe are required to produce a hole of 40 cm diameter!

How many burglars have the time and energy to do that?



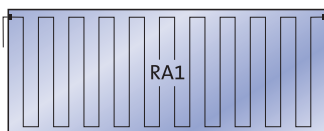
Optimum security with alarms

Equipping the premises with an alarm system is a sensible further security measure. Alarm wires or electrical circuits are connected to an alarm system, and damaging one pane of glass triggers an optical and/or acoustic alarm.

- With an alarm wire, silver electrical conductor wires run over the surface of the glass between the external pane and its internal coating. When the outside pane is broken, the wires are cut and an alarm is triggered.
- sGG SECURIT ALARM glass has an electrical circuit wired into the external pane of toughened glass: the whole surface shatters under the first heavy blow and breaks the electrical circuit, thereby triggering the alarm.

Examples of installation of alarm wire and connection position

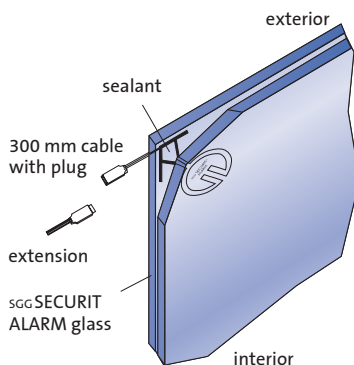
Alarm wire with edge connection



Alarm wire with surface connection

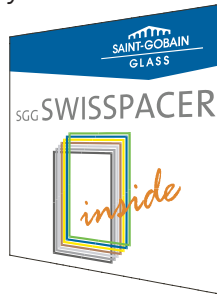


sGG SECURIT ALARM with edge connection



sGG SWISSPACER

All insulation glazing types are available with the sGG SWISSPACER, the innovative warm edge sealing with no thermal bridge which nevertheless has the same mechanical stability and manufacturing quality as conventional aluminium spacers. The resultant reduction in condensation around the edge of the glass and increase in thermal insulation mean greater comfort!



Any other questions?

If our products interest you, then please get in touch. We will be happy to advise you in choosing your individual solution.





SAINT-GOBAIN
MARINE APPLICATIONS
Jülicher Straße 495
D-52070 Aachen
Tel. +49 (0) 2 41 / 96 67-4 00
Fax +49 (0) 2 41 / 96 67-3 20
E-Mail marine@saint-gobain.com

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