

SGG CLIMAPLUS[®] SWS

*Low-emissivity double-glazed
units with "Warm Edge"
technology*

Technical Sheet
United Kingdom

SGG CLIMAPLUS[®] SWS

Low-emissivity double-glazed units with "Warm Edge" technology

Description

SGG CLIMAPLUS SWS is a low-emissivity double-glazed unit, which includes a SGG SWISSPACER thermal break spacer bar. This spacer bar reduces the thermal bridge effect around the edge of the unit to improve the overall thermal performance of the window (known as a "Warm Edge" effect).

SGG SWISSPACER consists of a fibre-glass reinforced, synthetic composite insulation material, which has an ultra-thin foil applied to the sealing side. This foil is not only impermeable to gases and vapour, but also provides good adhesion of double-glazing sealants.

SGG SWISSPACER is manufactured using an extrusion process. The geometry of the bars is similar to that of conventional metal spacer bars. SGG CLIMAPLUS SWS is manufactured in accordance with the same assembly process as SGG CLIMAPLUS double-glazed units with metal spacer bars.



Frame glazed with SGG CLIMAPLUS SWS

Applications

SGG CLIMAPLUS SWS can be used in the same applications as standard double-glazed units:

- aluminium, timber and PVC or composite windows
- glazed façades
- curtain walling
- glass roofs.

SGG SWISSPACER is heat-resistant, to be used in façades that are subjected to very high mechanical and thermal stresses.

Advantages

Thermal insulation

- Reduction in the overall U-value of the window by up to 15% or 0.3 W/m²K.
- 65% reduction in the thermal bridge effect around the edge of the unit.
- Helps to comply more easily with Part L of current Building Regulations.
- Significantly improves Window Energy Rating performance.

Advantages .../...

Energy saving

- More energy efficient thus reducing heating cost

Improved comfort and maintenance

- Reduced likelihood of cold spots near windows.
- Reduced risk of condensation and build up of mould on frames.
- Increased durability of frames, in particular timber frames.

Appearance

- Wide range of coloured spacer bars, which blend naturally with:
 - the insulation glass and the window frame
 - all components of the sealant system if used with exterior structural sealant glazing.
- Interlayer has a matt appearance with no metallic reflection.
- Perfect 90° corners

Environmentally friendly

- Can be recycled
- Reduced gas emissions associated with the greenhouse effect (due to potential energy savings).

Range

sgg SWISSPACER spacer bar

Manufacturing possibilities with sgg SWISSPACER	
Product	- sgg SWISSPACER (with aluminium foil) - sgg SWISSPACER-V (with high-grade steel foil)
Dimensions	- Widths: - sgg SWISSPACER : 8, 10, 11, 12, 14, 15, 16, 18, 20, 22, 24, 27 mm - sgg SWISSPACER-V : 8,10,12,14,15,16,18, 20 mm - Height: 6.5 mm - Length of bars: 6 m
Colours	- grey - black - white - sapphire blue - light brown - dark brown - sulphur yellow - yellow-green - opal green - brown-green - beige-brown - pastel yellow - grass green - light ivory - beige - red-brown and light grey. Other colours: on request
Accessories	- Solid or flexible corner keys, same colour as profile type, all widths - Special connectors - 8-20mm - Georgian bars: 11.5mm x 20mm - 11.5mm x 24mm - 11.5mm x 30mm

sgg CLIMAPLUS SWS double-glazed unit

Same range as sgg CLIMAPLUS

Performance

Thermal characteristics

• *sgg SWISSPACER spacer bar*

The material used for sgg SWISSPACER provides nearly 1000 times better thermal insulation than aluminium.

Linear thermal conductivity of the spacer bar material:

-sgg SWISSPACER = 0.19 W/mK

- Aluminium = 200 W/mK

• *sgg CLIMAPLUS SWS double-glazed unit*

The "warm edge" thermal break property of sgg SWISSPACER is included in the new international standard EN ISO 10077 concerning the thermal performance of windows (U_w).

According to this standard the thermal insulation performance is a function of the linear transmittance coefficient psi. This coefficient value takes into account the combined performance of the glass, spacer bar and frame. The lower the psi value, the higher the thermal insulation around the glass edge. This coefficient is used to calculate the value of the U_w coefficient of the window, in accordance with standard EN ISO 10077.

Examples of linear transmittance coefficient values ψ according to EN ISO 10077-2 ⁽¹⁾

Frame type	PVC and timber		Aluminium with thermal break	
	ψ (W/mK)	Gain	ψ (W/mK)	Gain
Aluminium	0.074	-	0.115	-
SGG SWISSPACER	0.044 (timber) 0.043 (PVC)	41%	0.060	48%
SGG SWISSPACER V	0.033	55%	0.041	64%

(1) Using a 4 (16) 4 double-glazed unit configuration, with a centre-pane U-value of 1.1 W/m²K

Source: Independently certified ψ window values from IFT Rosenheim and DIBt Berlin, 04/2003.

Thermal regulations

SGG CLIMAPLUS SWS double-glazed units enable windows to comply more easily with the requirements of Part L of current Building Regulations, be it whole window U-values or Window Energy Ratings (see "Standards and Regulations" section). The table below shows an example of the effect SGG SWISSPACER has on the U_w value for different frame types.

Thermal performance data

Influence on the thermal performance of different window types

Spacer system	Aluminium	High grade steel	SGG SWISSPACER	SGG SWISSPACER V
Wood window frame U-value $U_f = 1.3$ W/m ² K (for example)				
Psi value	0.074	0.053	0.044	0.033
Window U-value U_w 1-wing [W/m ² K]	1.3	1.3	1.3	1.2
Window U-value U_w 2-wing [W/m ² K]	4.5	1.4	1.3	1.3
Min. glass surface temp. at: -10, +20 [°C]	5.3	7.4	8.0	9.2
PVC window frame U-value $U_f = 1.9$ W/m ² K (for example)				
Psi value	0.070	0.052	0.043	0.034
Window U-value U_w 1-wing [W/m ² K]	1.5	1.5	1.4	1.4
Window U-value U_w 2-wing [W/m ² K]	1.7	1.6	1.6	1.5
Min. glass surface temp. at: -10, +20 [°C]	6.8	8.6	9.2	10.1
Aluminium window frame U-value $U_f = 2.0$ W/m ² K (for example)				
Psi value	0.115	0.072	0.060	0.041
Window U-value U_w 1-wing [W/m ² K]	1.7	1.6	1.5	1.5
Window U-value U_w 2-wing [W/m ² K]	1.9	1.7	1.7	1.6
Min. glass surface temp. at: -10, +20 [°C]	6.5	8.9	9.5	10.7

Psi value ψ : linear thermal transmittance at glass edge (W/mK) according to EN ISO 10077-2

All values for total window area 1.23 m x 1.48 m and centre-pane U-value $U_g = 1.1$ W/m²K

Processed Product Variations

Manufacturing frames

SGG SWISSPACER is easy to install. The frames can be manufactured:

- manually, using corner keys
- mechanically, using a special bending machine.

SGG SWISSPACER spacer bar provides the same level of rigidity and mechanical performance as standard metal spacer bars:

- quick and easy to process
- desiccant filling (it is advisable to fill the 2 longest sides)
- can be combined with Georgian bars
- retention of gas filling.

Non-rectangular frames are possible.

Assembly into a double-glazed unit

SGG CLIMAPLUS SWS double-glazed units are assembled in the same way as standard SGG CLIMAPLUS units and are compatible with butyl polysulphide, polyurethane and silicone sealants.

Please contact SAINT-GOBAIN GLASS for further details.



Timber frame glazed with SGG CLIMAPLUS SWS

Standards and Regulations

SGG CLIMAPLUS SWS double-glazed units comply with standard BS EN 1279 and will receive the relevant CE marking when it is officially in force.