

SGG PLANITHERM®

*High performance low-emissivity  
glass*

Technical Sheet  
United Kingdom

# SGG PLANITHERM®

*High performance low-emissivity glass*

## Description

SGG PLANITHERM is Europe's best selling range of high performance low-emissivity products, incorporating the very latest advancements in thermally insulating glass coating technology.

Renowned for its extremely neutral appearance, SGG PLANITHERM very effectively reflects long-wave heat radiation back into a room, thereby minimising heat loss through a window while also maximising solar heat gain and natural light transmission.

Manufactured on SAINT-GOBAIN GLASS UK's 'magnetron' coater, a combination of microscopically thin multiple metal oxide layers are applied to high quality SGG PLANILUX clear float glass using a magnetically enhanced cathodic sputtering process under vacuum conditions.

Depending on the composition of these transparent coating layers, several different products can be produced, distinguishable by the thermal performance, spectrophotometric values and processing characteristics.

The SGG PLANITHERM range consists of the following coatings:

- SGG PLANITHERM TOTAL:

- a unique single-stock, high performance low-emissivity glass which can be used either annealed or toughened
- very neutral appearance before and after toughening
- high light transmission
- optimum centre pane U-value of 1.2 W/m<sup>2</sup>K\*
- optimised solar gain for excellent window energy ratings.

- SGG PLANITHERM TOTAL 1.3:

- offers the same aesthetic and processing benefits but with an optimum centre pane U-value of 1.3W/m<sup>2</sup>K\*.

- SGG PLANITHERM ULTRA N:

- an exceptionally low-emissivity glass with an optimum centre pane U-value of 1.1 W/m<sup>2</sup>K\*
- very neutral appearance
- extremely high light transmission
- available in a "to be toughened" version (SGG PLANITHERM ULTRA N II).

\* 4-16-4mm double-glazed unit with 90% argon-filled cavity.



SGG PLANITHERM is designed for use in all double glazing applications, in all frame types for both new-build and replacement markets:

- windows and skylights in residential buildings and private domestic housing
- conservatories and patio doors
- windows and façades of non-residential buildings.

## Advantages

The SGG PLANITHERM range offers many features which set it apart from traditional low-E products, helping to give processors and window fabricators man added edge in an increasingly discerning and competitive market.

### *Enhanced Thermal Insulation*

A double-glazed unit incorporating SGG PLANITHERM is up to 3 times more thermally efficient than an ordinary double-glazed unit and offers significantly better thermal insulation compared to traditional hard coated low-E products:

- Considerable reductions in heating bills
- Reduces condensation on the inner pane
- Improved comfort with less drafts and cold spots near glazed areas
- Environmentally friendly solution, given the lower CO<sub>2</sub> emissions associated with reduced energy consumption
- Facilitates compliance with building regulations for a wider range of frame designs

### *Neutral Appearance*

The new generation Planitherm coatings are remarkably neutral in both transmission and reflection as opposed to traditional hard coated low-E products which typically have a yellow/brown tint.

### *Exceptional Clarity*

The SGG PLANITHERM range offers a high level of light transmittance, maximising the entry of natural daylight into the building. These types of coatings also benefit from a lack of the 'haze effect' commonly associated with hard coated products.

### *Specific advantages of SGG PLANITHERM TOTAL*

- A unique "single stock" product; the same version can be used either annealed or toughened. This significantly reduces stockholdings, reducing working capital, freeing up warehouse space, as well as simplifying logistics and production planning.
- Very durable and easy to process helping to ensure the highest levels of quality of finished units.
- May offer improved toughening cycle times, depending on furnace type and settings.

## Range

### *Monolithic glass*

#### *Manufacturing sizes*

All SGG PLANITHERM products are available in the following standard thicknesses and dimensions:  
SGG PLANITHERM manufacturing sizes

Thickness	Standard sizes
4-6-8-10mm	6000 x 3210 mm
	2550 x 3210 mm
	2250 x 3210 mm

### *Toughened Glass*

SGG PLANITHERM TOTAL is the first low-E glass of its kind that exists as a single version for both annealed and toughened requirements. Critically, the coating retains the same spectrophotometric characteristics and aesthetic qualities after toughening.

SGG PLANITHERM ULTRA N II is a special version of SGG PLANITHERM ULTRA N that must be toughened. Once toughened, this product acquires the same spectrophotometric characteristics and aesthetic qualities as annealed SGG PLANITHERM ULTRA N

For applications requiring safety glass SGG PLANITHERM TOTAL and SGG PLANITHERM ULTRA N II can be readily toughened to meet the requirements of BS EN 6206.

### Laminated Glass

SGG PLANITHERM TOTAL and SGG PLANITHERM ULTRA N are available in most common laminated configurations using either a conventional PVB interlayers (SGG STADIP and SGG STADIP PROTECT) or an acoustic PVB interlayer (SGG STADIP SILENCE).

Laminated glass can offer improved safety, security or acoustic performance as well as filtering out UV radiation. For dimensions and compositions: please contact SAINT-GOBAIN GLASS.

### Double-glazing

The SGG PLANITHERM range can be combined with many other Saint-Gobain products, permitting a multitude of high performance, multi-functional glazing options including:

- Self-cleaning and/or solar control glazing
- Acoustic insulation
- Safety and security
- Obscured and/or decorative glazing

## Performance

Since SGG PLANITHERM must always be assembled into double glazed units, spectrophotometric performances are only given for double glazing. A range of performance data with various multifunctional unit combinations are given in the following tables.

### Position of the coating

The SGG PLANITHERM coating is generally positioned on face 3 of a double glazed unit though it is possible to place the coating on face 2 without affecting the U-value. However, the appearance may vary slightly depending on whether the coating is positioned on face 2 or 3. It is therefore recommended that units are glazed with the coating on the same face throughout a given façade.

### Appearance in reflection

All coated glass, even the most neutral, can have a slightly different appearance when viewed in reflection. This is inherent to the product and depends on the distance, the angle of incidence, the ratio between the levels of internal and external lighting of the building and the type of objects that are reflected on the façade.

### SGG PLANITHERM TOTAL

SGG PLANITHERM TOTAL					
External pane		SGG PLANILUX			
Internal pane		SGG PLANITHERM TOTAL			
Composition *	mm	4 (12) 4	4 (16) 4	6 (12) 6	6 (16) 6
Thickness	mm	20	24	24	28
Weight	kg/m <sup>2</sup>	20	20	30	30
Low-E coating position	face	3	3	3	3
Light factor					
LT	%	79	79	77	77
LRe	%	12	12	11	11
LRi	%	12	12	11	11
UV	%	35	35	30	30
Energy factor					
T	%	54	54	51	50
Re	%	23	23	21	21
A1	%	12	12	17	17
A2	%	10	10	12	12
Solar factor g		0,63	0,64	0,61	0,61
Shading Coefficient		0,73	0,73	0,70	0,70
U-value	W/(m <sup>2</sup> .K)				
Air		1,7	1,4	1,7	1,4
Argon 90 %		1,3	1,2	1,3	1,2
Sound reduction indices *					
RW	dB	30	30	33	34
C	dB	0	0	-1	-2
Ctr	dB	-3	-3	-3	-5
RA	dB	30	30	32	32
RA,tr	dB	27	27	30	29

## SGG PLANITHERM TOTAL 1.3

SGG PLANITHERM TOTAL 1.3					
External pane		SGG PLANILUX			
Internal pane		SGG PLANITHERM TOTAL 1.3			
Composition	mm	4 (12) 4	4 (16) 4	6 (12) 6	6 (16) 6
Thickness	mm	20	24	24	28
Weight	kg/m <sup>2</sup>	20	20	30	30
Low-E coating position	face	3	3	3	3
Light factor					
LT	%	77	77	75	75
LRe	%	11	11	11	11
LRi	%	12	12	11	11
UV	%	35	35	30	30
Energy factor					
T	%	54	54	50	50
Re	%	20	20	18	18
A1	%	12	12	17	17
A2	%	14	14	15	15
Solar factor g		0,66	0,66	0,63	0,63
Shading Coefficient		0,76	0,76	0,72	0,73
U-value	W/(m <sup>2</sup> .K)				
Air		1,8	1,5	1,8	1,5
Argon 90 %		1,5	1,3	1,5	1,3

## SGG PLANITHERM ULTRA N

SGG PLANITHERM ULTRA N					
Double glazing					
External pane		SGG PLANILUX			
Internal pane		SGG PLANITHERM ULTRA N			
Composition	mm	4 (12) 4	4 (16) 4	6 (12) 6	6 (16) 6
Thickness	mm	20	24	24	28
Weight	kg/m <sup>2</sup>	20	20	30	30
Low-E coating position	face	3	3	3	3
Light factor					
LT	%	80	80	78	78
Re	%	12	12	11	11
Ri	%	12	12	11	11
uv	%	33	33	29	29
Energy factor					
T	%	53	53	50	50
Re	%	24	24	21	21
A1	%	13	13	17	17
A2	%	10	10	12	12
Solar factor g		0,63	0,63	0,60	0,60
Shading Coefficient SC		0,72	0,72	0,69	0,69
U-value	W/(m <sup>2</sup> .K)				
Air		1,6	1,4	1,6	1,4
Argon 90%		1,3	1,1	1,3	1,1

**Assembly into double-glazed units:**

- All SGG PLANITHERM coatings must be edge-deleted before assembly into double-glazed units.
- The coating is always located on the inside of the unit facing the cavity (face 2 or 3).

**Toughened, heat -strengthened, heat-soak test**

- SGG PLANITHERM TOTAL and SGG PLANITHERM ULTRA N II can be toughened and heat-soak tested.
- SGG PLANITHERM ULTRA N II must be toughened before being assembled in double-glazed units. This version cannot be used in annealed form since it acquires its performance characteristics during the toughening process.
- Once the glass has been toughened or heat-strengthened, it can no longer be cut or edgeworked. Similarly, holes and notches can no longer be drilled. All of these processes must be carried out before the glass is toughened.

**Curved glass**

Only SGG PLANITHERM TOTAL, and SGG PLANITHERM ULTRA N II can be curved.

**Laminated glass**

- All products in the SGG PLANITHERM range can be laminated.
- The coating must always be located on the outside of the laminated glass.
- The glass cannot be laminated if the coating is in contact with the PVB.
- In all cases, the designer and client must approve the possible aesthetic differences between laminated SGG PLANITHERM products and standard SGG PLANITHERM products.

*\* For further information, please refer to the appropriate product handling guide.*

## Installation Guidelines

The most appropriate method for installing and assembling double-glazing depends on several factors, including: the size of the glass, exposure to external stresses and the type of frame or façade system.

The installation and fixing techniques that are used for the glass must conform to the recommendations of current national standards and regulations.

The positioning and fixing of the glass, the dimensions of channels and the permitted deflection for the frames for double glazed units are not specific to SGG PLANITHERM products.

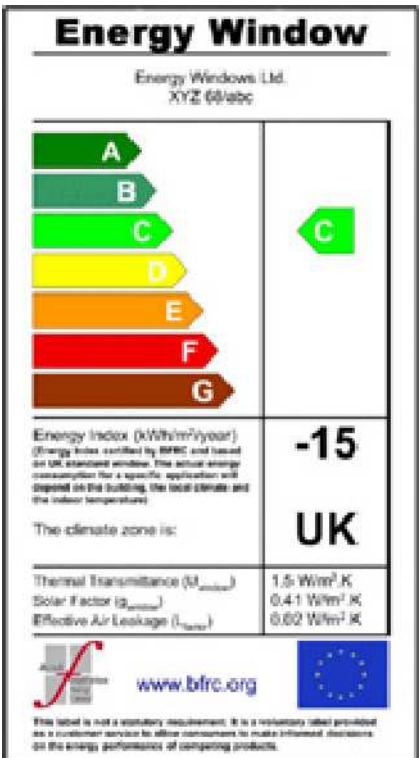
**Note**

The glass must be toughened if the glass unit is installed between 2 zones with a temperature difference exceeding certain critical values. Changes in glass temperature are influenced a number of factors including: climatic conditions, height of the channels, shadows cast from a neighbouring building, the proximity of a heat source or the use of blackout blinds.

Due to their excellent thermal insulating performance, sGG PLANITHERM products are an ideal low-E solution for compliance with current national Building Regulations relating to energy efficiency and the conservation of fuel and power. See “Standards and Regulations” section on our website for more details.

**Window Energy Ratings**

With its optimised balance of very low emissivity and high solar gain sGG PLANITHERM TOTAL is one of the most energy efficient low-E glazing products available under the BFRC window energy rating scheme, performing significantly better than traditional low-E products. Independent simulations show that when incorporated in a typical window with a 30% frame factor, sGG PLANITHERM TOTAL can improve the BFRC energy index by more than 5 kWh/m<sup>2</sup>/year when compared to hard coated low-E glazing.



**Whole Window U-values**

Thanks to their superior thermal insulating performance, sGG PLANITHERM products enable a wider range of frame types and designs to meet mandatory maximum and/or area weighted average whole window U-value requirements, affording greater flexibility to architects, specifiers and fabricators.

**Centre-pane U-values**

sGG PLANITHERM TOTAL and sGG PLANITHERM ULTRA N comfortably meet the alternative centre-pane method of compliance for replacement windows in England and Wales (no worse than 1.2 W/m<sup>2</sup>K). This alternative method of compliance means that the thermal performance of the frame need not be taken into account, eliminating the necessity for costly testing and/or calculation.

sGG PLANITHERM meets the requirements of class C of European standard BS EN 1096 and carries the relevant CE marking as required.