

**TITLE**  
PLANITHERM ONE II

**SUBTITLE**  
High performance low- emissivity glass



**PRODUCT INFORMATION**

**Advantages**

**Performance**

With an optimum centre- pane U- value of 1.0W/ m2K (90% argon- filled), SGG PLANITHERM ONE can comfortably meet current Building Regulations by improving whole window U- values for all frame types.

Considerable reductions in heating bills.

Environmentally friendly solution, given the lower CO2 emissions associated with reduced energy consumption .

**Comfort & Aesthetics**

Eliminates cold areas around windows resulting in greater comfort.

Reduces incidence of condensation on the inner pane

Remarkably neutral appearance in both transmission and reflection.

Maximises entry of natural daylight.

Maximises use of living and working areas.

**Where can it be used?**

SGG PLANITHERM ONE is a low- E glass offering the lowest centre pane U- value in the market thus providing excellent thermal insulation for the most demanding of glass specifications:

**Residential New Build Solutions:**

- Windows and skylights
- Patio doors, French doors and other external doors

**Commercial New Build and Renovation Solutions:**

- Façades and windows
- Structural glazing
- Overhead glazing



**Processing**

SGG PLANITHERM ONE must always be processed into an insulating glass unit (IGU). SGG PLANITHERM ONE II must always be tempered prior to its manufacture within the IGU. For full processing and handling guidelines, please request a copy of the detailed "Guidance for Use low- E Coated Glass" documents and accompanying summary brochure.

SGG PLANITHERM ONE is manufactured on a magnetron coater. A unique combination of metal oxide layers are applied to high quality SGG PLANILUX clear float glass using a magnetically enhanced cathodic sputtering process under vacuum conditions.

**Combinations**

**Monolithic Glass:**

Standard thickness: 4mm and 6mm

Substrate: SGG PLANILUX clear float

**Toughened Glass:**

Unique in the market, SGG PLANITHERM ONE II can be toughened to meet the safety glazing performance requirements of BS EN 12150. This product has the same aesthetics as annealed SGG PLANITHERM ONE.

**Laminated Glass:**

SGG STADIP, SGG STADIP PROTECT laminated glass and SGG STADIP SILENCE acoustic laminated glass in most common configurations.

**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 <sup>SGG</sup> PLANITHERM range consists of the following coatings:

- <sup>SGG</sup> 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/ m2K\*
  - optimised solar gain for excellent window energy ratings.
- <sup>SGG</sup> PLANITHERM ULTRA N:
  - an exceptionally low- emissivity glass with an optimum centre pane U- value of 1.1 W/ m2K\*
  - very neutral appearance
  - extremely high light transmission
  - available in a "to be toughened" version (<sup>SGG</sup> PLANITHERM ULTRA N II).

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



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## RANGE

### Monolithic glass

#### Manufacturing sizes

All <sup>SGG</sup> PLANITHERM products are available in the following standard thicknesses and dimensions:



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#### Toughened Glass

<sup>SGG</sup> 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.

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

For applications requiring safety glass <sup>SGG</sup> PLANITHERM TOTAL + and <sup>SGG</sup> PLANITHERM ULTRA N II can be readily toughened to meet the requirements of BS EN 12150.

#### Laminated Glass

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

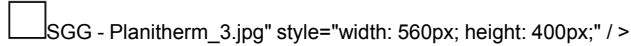
#### Position of the coating

The <sup>SGG</sup> 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.

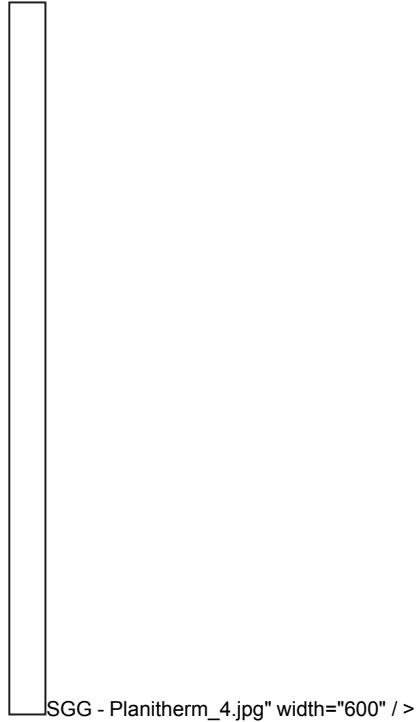
#### Appearance in reflection

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 ULTRA N



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.

### STANDARDS AND REGULATION

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 as much as 14kWh/ m<sup>2</sup>/ year when compared to traditional hard coated low-E glazing and around 5kWh/ m<sup>2</sup>/ year compared to other low-E brands.



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### 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.

### PRODUCT APPLICATION

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 CO2 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.

### 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.