SAINT-GOBAIN GLASS

Heatable glass

SAINT-GOBAIN GLASS SYSTEMS
Applications

SGGEGLAS is an electric insulating glass unit which can be used as the main heating system or to provide extra comfort in addition to the main heating system. Widely used in Northern Europe, SGGEGLAS provides unequalled comfort, in both new and refurbished buildings. It is an ideal solution for places which are only occupied occasionally and require rapid heating.

- In the residential sector, balconies, conservatories and indoor swimming pools become rooms you can use all year round.
- In the non-residential sector, doctors’ surgeries, hospitals, waiting rooms, classrooms, shops and glazed terraces, all benefit from its advantages.
- SGGEGLAS is also useful to do de-icing of glass roofs.

Advantages

Total comfort!

- Radiant heating
  - Gentle, pleasant warmth
  - Immediate feeling of comfort
  - The surface temperature can be regulated
- No cold surfaces
  - No condensation
  - An even temperature
  - No draughts near windows
- Energy savings
  - Very good thermal insulation
  - High electrical efficiency
- It is possible to lower the ambient temperature by 1 to 2°C with no loss of comfort
- Safety
  - The electrical power is cut if the heatable glass is broken
  - The use of tempered glass for the inner pane ensures protection from injury
- Appearance
  - Identical to a conventional low-E insulating glass unit.

Heating system
totally invisible
no extra bulk
clean
maintenance-free

Electrical power
50 to 300 W/m²

Temperature of the glass
20 to 40°C
**Description**

**SGEGLAS** is an insulating glass unit where one of the faces can be electrically heated.

The technology is based on the use of a classic low emissivity glass, which exhibits a certain level of electrical conductivity.

The conductive coating is connected to an electricity supply cable via electrodes on either side of the glass.

When the electrical power is switched on, the conductive coating converts the electrical energy into heat.

As a result of the low emissivity coating, the heat is prioritarily transferred to the inside. It is diffused towards the inside of the room, through the untreated face of the glass (face 4).

The sealant barriers of the insulating glass unit are made of materials which withstand the cumulative effects of the heating function and climatic stresses.

<table>
<thead>
<tr>
<th>Main function</th>
<th>Surface temperature of the internal glass (°C)</th>
<th>Electrical power (W/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>+25 à +40</td>
<td>100 - 300</td>
</tr>
<tr>
<td>Comfort</td>
<td>+20 à +25</td>
<td>50 - 100</td>
</tr>
</tbody>
</table>

**Electrical characteristics**
- Electric cable: double insulated, standard length 1.5 m
- Supply voltage: 0 to 230 VAC maximum

• **Functions**

• **Glazing characteristics**

- Inner face: classic low emissivity glass 4 or 6 mm tempered (eventually laminated)
- External face: any type of glass (clear, solar control, low-emissivity tempered, laminated, patterned, screen-printed)

- Minimum size: 300 x 300 mm
- Maximum size: 2170 x 4000 mm
- Shapes: rectangular

**Performances (CEN standards)**

- Light transmittance: 75%
- Light reflectance: 17%
- Solar factor: 71%
- U-value (EN 673): 1.9 to 1.1 W/(m².K)

**Glazing**

The design and installation of **SGEGLAS** is specific to each project. It requires a specific study, taking national regulations into account.

The installation instructions and connection diagram for the product are supplied on delivery.

- **Incorporation in a frame**

  **SGEGLAS** heatable glass is compatible with most frames for windows and facades (aluminium, U-PVC or vinyl, wood). For casements, a flexible cable guide must be used, linking the frame to the casement.

- **Installation**

  **SGEGLAS** is installed, in new or refurbished buildings, in the same way as a conventional insulating glass unit, taking into account the presence of the electrical cable. Heatable glass can be installed in a window without the need for any special tools.

  To heat the interior of a room, the heatable face must be face 3.

- **Electrical connection**

  The glazing must be connected in accordance with the electrical diagram supplied by the manufacturer. It must comply with regulations currently in force for electrical installations.

  It is recommended that the electrical cable is run through flexible sheaths in the internal spaces in the frames, the wall or the false ceiling. An electrical transformer can be used to alter the supply voltage.

- **Temperature regulation**

  It is possible to regulate the temperature of the glass. The choice of the method of regulation depends on what the heatable glass is used for (heating or comfort).
Regulations

- **Electrical safety**
  SGGGLAS is certified as conforming to European standard EN 60 335-2-30 concerning the safety of electrical heating devices in buildings (230 VAC max., 600 W/m² max., class II, IP34).

- **Electromagnetic compatibility**
  FIMKO certificate of conformity no. EMC/098/96.

Performance

Values given in accordance with international standards

<table>
<thead>
<tr>
<th>Composition (mm)</th>
<th>External pane</th>
<th>Clear float</th>
<th>SGGPLANITHERM FUTUR N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light factors</td>
<td>Unit</td>
<td>Standard</td>
<td></td>
</tr>
<tr>
<td>LT%</td>
<td>EN 410</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>LE%</td>
<td>EN 410</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>LR%</td>
<td>EN 410</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>UV transmittance</td>
<td>%</td>
<td>EN 410</td>
<td>38</td>
</tr>
<tr>
<td>Solar radiant heat factors</td>
<td>T</td>
<td>%</td>
<td>EN 410</td>
</tr>
<tr>
<td>A1</td>
<td>%</td>
<td>EN 410</td>
<td>15</td>
</tr>
<tr>
<td>A2</td>
<td>%</td>
<td>EN 410</td>
<td>11</td>
</tr>
<tr>
<td>Solar factor</td>
<td>E</td>
<td>0.72</td>
<td>0.68</td>
</tr>
<tr>
<td>EISOG60681</td>
<td>0.70</td>
<td>0.67</td>
<td>0.53</td>
</tr>
<tr>
<td>Shading coefficient</td>
<td>SC</td>
<td>EN 410</td>
<td>0.82</td>
</tr>
<tr>
<td>SCISO60681</td>
<td>0.83</td>
<td>0.77</td>
<td>0.65</td>
</tr>
<tr>
<td>Thermal insulation**</td>
<td>U-value</td>
<td>W/(m².K)</td>
<td>EN 673</td>
</tr>
<tr>
<td>U-summer</td>
<td>BTU/hr·ft²·°F</td>
<td>20.9</td>
<td>20.1</td>
</tr>
<tr>
<td>U-winter</td>
<td>BTU/hr·ft²·°F</td>
<td>21.2</td>
<td>21.2</td>
</tr>
<tr>
<td>Argon filled cavity</td>
<td>U-value</td>
<td>W/(m².K)</td>
<td>EN 673</td>
</tr>
</tbody>
</table>

* Position of coating: face 3 for the classic low-E glass, face 2 for SGGPLANITHERM FUTUR N.
** Values given in the absence of heating.