Fire-resistant glass structures are usually made of one or more transparent space-enclosing elements as well as seals and fastening elements. In their function as space-enclosing elements, they should prevent the spread of fire and smoke for a certain period. Glass blocks used in fire-resistant glass structures are not load-bearing. They offer great versatility where fire-protection needs are higher and yet natural light and/or transparency are desirable.

Fire resistance Class G/E

Walls and ceilings
Class G glass structures are transparent vertical (> 80° – 90°) and horizontal (0° – > 15°) enclosures, which prevent the spread of fire and smoke. The structures prevent the emission of heat radiation and the applicable standards specify no requirements on the heating of surfaces facing away from the fire. The glass surfaces within the enclosure must not collapse within the classification period (G 30 – G 120) and must remain intact as space enclosing elements. Please note that only general guidelines exist for DIN 18175 compliant fire-resistant glass structures using glass blocks, and that no objective criteria exist. Local regulatory agencies decide on a case-by-case basis on whether use of glass is permissible.

- Emergency escape routes
- Curtain walls in large, continuous spaces
- Angles to prevent spread of fire
- Measures in façades to prevent the spread of fire.

<table>
<thead>
<tr>
<th>Resistance class compliant with DIN 4102, Part 4 / Part 13 / EN 357</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. covered area per element</td>
</tr>
<tr>
<td>Max. element height</td>
</tr>
<tr>
<td>Max. element width</td>
</tr>
<tr>
<td>Adjacent placement of elements</td>
</tr>
<tr>
<td>Element form</td>
</tr>
<tr>
<td>Thickness of glass block wall</td>
</tr>
<tr>
<td>Connectors</td>
</tr>
<tr>
<td>Fire-resistance period in minutes</td>
</tr>
<tr>
<td>a) Flame and smoke/gas penetration (Class G)</td>
</tr>
<tr>
<td>as per classification</td>
</tr>
<tr>
<td>Testing period</td>
</tr>
<tr>
<td>b) Flame and smoke/gas and heat penetration (Class F)</td>
</tr>
<tr>
<td>as per classification</td>
</tr>
<tr>
<td>Testing period</td>
</tr>
<tr>
<td>Glass block type and format</td>
</tr>
</tbody>
</table>

Copies of approval certificates will be provided by your SOLARIS blocklayer or by SOLARIS if required.

Fire Resistance Class F/EI

Walls and ceilings
Class F glass structures are transparent vertical (> 80° – 90°) and horizontal (0° – > 15°) enclosures, which prevent the spread of fire and smoke as well as heat radiation. The temperature of surfaces facing away from the fire temperature difference may not increase by more than 140° Kelvin on an average and 180° K at any single point (DIN 4102, Part 2, Section 5.2.2.). All classes including F-90*, fire-retardant or fireproof glass structures as specified by building laws for interiors and exteriors can be realised using glass blocks.

* F-90 fire-resistant wall tested for low impact (3000 Nm) as per DIN 4102 – 3, 28mm joint.

Note that Class F (EI) fire-resistant glass structures may be executed only by listed, professional SOLARIS Partners.
### Resistance class according to DIN 4102, Part 4 / Part 13 / EN 357

<table>
<thead>
<tr>
<th></th>
<th>G 120</th>
<th>F 30</th>
<th>F 60</th>
<th>F 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>E 120</td>
<td>EI 30</td>
<td>EI 60</td>
<td>EI 90</td>
</tr>
<tr>
<td>Fire load (kN/m²)</td>
<td>4.4m²</td>
<td>9.0m²</td>
<td>9.0m²</td>
<td>9.0m²</td>
</tr>
<tr>
<td>Load-bearing area per element</td>
<td>3.5m²</td>
<td>6.0m²</td>
<td>6.0m²</td>
<td>6.0m²</td>
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<tr>
<td>Fire load (kN/m²)</td>
<td>4.4m²</td>
<td>9.0m²</td>
<td>9.0m²</td>
<td>9.0m²</td>
</tr>
</tbody>
</table>

### Adjacent placement of elements
- permitted
- permitted
- permitted
- permitted

### Element form
- double layer
- single layer
- single layer
- single layer

### Thickness of glass block wall
- 200mm
- 80mm
- 160mm
- 160mm

### Fire-resistance period in minutes
#### a) Flame and smoke/gas penetration (Class G)
- as per classification
- Testing period
- 120 > 135
- 30 > 42
- 60 > 89
- 90 > 102

#### b) Flame and smoke/gas and heat penetration (Class F)
- as per classification
- Testing period
- – > 42
- – > 65
- 60 > 90
- 90 > 100

### Certification no.
- Z-19.14-527 IfBt, Berlin
- Z-19.14-1196 IfBt, Berlin
- Z-19.14-1196 IfBt, Berlin
- Z-19.14-1197 IfBt, Berlin

### Glass block type and format
- Type 198 BSH 20 format 190 x 190 x 80 mm
- Type 1930 F format 190 x 190 x 80 mm
- Type 1960 F format 190 x 190 x 160 mm
- Type 1990 F format 190 x 190 x 160 mm

### Resistance class according to DIN 4102, Part 4 / Part 13 / EN 357

<table>
<thead>
<tr>
<th></th>
<th>G 30</th>
<th>F 30</th>
<th>F 60</th>
<th>F 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>E 30</td>
<td>EI 30</td>
<td>EI 60</td>
<td>EI 90</td>
</tr>
<tr>
<td>Load-bearing area per element</td>
<td>according to DIN 1045 Item 20.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness of rcc ribs</td>
<td>5.0kN/m²</td>
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<td></td>
<td></td>
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<tr>
<td>Load-bearing area per element</td>
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</tr>
<tr>
<td>Fire load (kN/m²)</td>
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<td></td>
</tr>
<tr>
<td>max. covered area per element</td>
<td>5.0kN/m²</td>
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<td></td>
</tr>
<tr>
<td>max. element height</td>
<td>5.0kN/m²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>max. element width</td>
<td>5.0kN/m²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjacent placement elements</td>
<td>length-wise and breadth-wise</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Load-bearing properties
- Reinforced concrete according to DIN 1945/20.3
- Test load max. 5.0kN/m²
- max. 5.0kN/m²
- max. 5.0kN/m²

### Fire resistance period in minutes
#### a) Flame and smoke/gas penetration (Class G)
- as per classification
- Testing period
- 30 > 45
- 60 > 80
- 90 > 132

#### b) Flame and smoke/gas and heat penetration (Class F)
- as per classification
- Testing period
- – > 45
- – > 65
- 60 > 90
- 90 > 97

### Certification no.
- DIN 4102, Part 4
- Z-19.14-1237 IfBt, Berlin
- Z-19.14-1238 IfBt, Berlin
- Z-19.14-1239 IfBt, Berlin

### Reinforced glass type and format
- all types and formats as DIN 4243/ prEn 1051
- Type BG 1830 F format 190 x 190 x 80 mm
- Type BG 1960 F format 190 x 190 x 160 mm
- Type BG 1990 F format 190 x 190 x 160 mm