Glass BLOCKS

Made in france

La Rochère

Glass architecture
La Rochère is the only manufacturer of glass bricks, tiles, blocks and panels in France.

For every project: a new construction or renovation, internally or externally; glass blocks can be adapted for all architectural directions and are associated with all façade materials.

Glass blocks have thermal isolation and high acoustic performance.

Glass is resistant to fire, impact and attack from weather.
1 Orly West Airport extension / Archi.: A.D.P. / Contractor: CFEM / Prefabricated panels with transparent bricks HU 248  
2 Housing / Sceaux / Archi.: Bouat Massip / Contractor: SNSH Amelot / transparent blocks HU 248  
3 Cafeteria Fenwick / Archi.: P. Colombier & D. Damon / TELECOM / Nantes Rézé / Archi.: G. & D. Peneau / Contractor: Desfontaines / panels made to measure in clear Cross reeded HU 248  
4 Louis Marin School / Custines - oval shaped office / Archi.: Zomeno / Contractor: La Voge / Crevechamps (54) / transparent bricks HU 198 & IME / Luneville / Archi.: M. Thiriet (agency Isabey) / Contractor: CLM / prefaceted panel Flemish HU 198  
5 SERNAM / St Etienne / Archi.: Lévêque - Rivière - Dudzik / Contractor: GFC / Sobriver / Flemish clear Bricks HU 198  
6 Entrance of building / Marseille / Prefabricated curved panels  
7 Low-cost housing / Niort / Archi.: Lancereau - Meyniel / Contractor: SOGEM / Flemish bricks HU 248  
8 Car park at City Hall, Besançon / Archi.: Varin / Contractor: Moyse et Locatelli / transparent blocks HU 198  
9 Jacques Brel Cultural Centre / Thionville / Archi.: Henz / Contractor: Lutzweiller / Round transparent bricks HU 248.
INSULATING CLEAR GLASS BRICKS

All glass blocks can be sandblasted one side or both sides

<table>
<thead>
<tr>
<th>Size L x l x thickness (cm)</th>
<th>Weight (kg)</th>
<th>Quantity /m²</th>
<th>Quantity /box</th>
<th>Quantity /pallet</th>
<th>Acoustic value (dB)</th>
<th>Heat transmission factor W/m².K</th>
<th>Fire resistance (min)</th>
<th>Fire insulation EI /Fire integrity E</th>
<th>Advised joint (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>195 19x19x5</td>
<td>2</td>
<td>25</td>
<td>8</td>
<td>576</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>198 19x19x8</td>
<td>2,3</td>
<td>25</td>
<td>5</td>
<td>420</td>
<td>32 to 42</td>
<td>3.1</td>
<td>15/60</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1910 19x19x10</td>
<td>2,7</td>
<td>25</td>
<td>4</td>
<td>336</td>
<td>-</td>
<td>2.9</td>
<td>15/60</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>248 24x24x8</td>
<td>4</td>
<td>16</td>
<td>5</td>
<td>250</td>
<td>-</td>
<td>3.1</td>
<td>-</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3010 29.8x29.8x9.8</td>
<td>7,2</td>
<td>10</td>
<td>4</td>
<td>128</td>
<td>-</td>
<td>2.9</td>
<td>-</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>60049JC 60091 60053 60096</td>
<td>198&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1910</td>
<td>248</td>
<td>3010</td>
<td>195 19x19x8</td>
<td>248</td>
<td>198&lt;sup&gt;a&lt;/sup&gt;</td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>60004 60007JC 60013 60009 60015</td>
<td>195 19x19x5</td>
<td>248</td>
<td>3010</td>
<td>195 19x19x5</td>
<td>195 19x19x8</td>
<td>248</td>
<td>195 19x19x5</td>
<td>248</td>
<td>10</td>
</tr>
</tbody>
</table>

<sup>a</sup>Cubiver 19.6x19.6x8 2,7 25 5 360 - - - 10
INSULATING SPECIALIST GLASS BRICKS

All glass blocks can be sandblasted one side or both sides.
INSULATING COLOUR GLASS BRICKS

All glass blocks can be sandblasted one side or both sides

<table>
<thead>
<tr>
<th>Technical informations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td>L x l x thickness (cm)</td>
</tr>
<tr>
<td>198 19x19x8</td>
</tr>
<tr>
<td>^Cubiver 19.6x19.6x8</td>
</tr>
</tbody>
</table>
DECORATIVE SANDED GLASS BRICKS

Sandblasted one side

All glass blocks can be sandblasted one side or both sides with add value
TILTING CHASSIS
Glass blocks 198 N included

Possibility of use: inside / outside
Material: white thermocoated zinc-plated steel
Size: see table below

Item # | Material | Size | Joined between bricks | Surface | Aspect | Packaging | Not rated on
--- | --- | --- | --- | --- | --- | --- | ---
N°208 | 60059 | 21.5 x 23 cm | 1 cm | smooth | white | unity | air, water and fire transmission.

Glass blocks not included

Possibility of use: inside / outside
Material: white thermocoated zinc-plated steel
Size: see table below

Item # | Material | Size | Joined between bricks | Surface | Aspect | Packaging | Not rated on
--- | --- | --- | --- | --- | --- | --- | ---
N°20.40.8 | 60060 | 21.5 x 42.5 cm | 1 cm | smooth | white | unity | air, water and fire transmission.

Technical informations

tilt adjusted by use of tilt chain (chain and instructions are included with the chassis)

<table>
<thead>
<tr>
<th>item #</th>
<th>tilting chassis only</th>
<th>overall dimensions (width x height)</th>
<th>incorporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>60059</td>
<td>21.5 x 23 cm</td>
<td>1 brick 198</td>
<td></td>
</tr>
<tr>
<td>60060</td>
<td>21.5 x 42.5 cm</td>
<td>1 x 2 bricks 198</td>
<td></td>
</tr>
<tr>
<td>60062</td>
<td>42 x 43 cm</td>
<td>2 x 2 bricks 198</td>
<td></td>
</tr>
<tr>
<td>60064</td>
<td>26.5 x 28 cm</td>
<td>1 brick 248</td>
<td></td>
</tr>
<tr>
<td>60066</td>
<td>26.5 x 53 cm</td>
<td>1 x 2 bricks 248</td>
<td></td>
</tr>
<tr>
<td>60068</td>
<td>52 x 53 cm</td>
<td>2 x 2 bricks 248</td>
<td></td>
</tr>
</tbody>
</table>
CHARACTERISTICS OF WALLS MADE of insulating glass bricks

Description

Glass
- Composition: the silico-sodo-calcium glass used is obtained by fusion at approximately 1550°C of a silica mixture (vitrifying body), sodium (melting agent) and lime (stabiliser).
- Physical characteristics: density: 2.5, expansion: between +20°C and +220°C = 9 x 10⁻⁶ /°C

Insulating glass bricks
Manufactured by heat fusion at > than 800°C of two hollow half-bricks obtained by compression of a glass drop. These bricks contain rarefied air, for added strength and insulation.

Physical characteristics

Technical informations

<table>
<thead>
<tr>
<th>Size (cm)</th>
<th>Light transmission factor according to model</th>
<th>Heat transmission factor W/m².K</th>
<th>Acoustique value (dependind on frequency)</th>
<th>Weight per m² (1 cm seal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>198 19x19x8 clear</td>
<td>40 to 83%</td>
<td>3.1</td>
<td>32 to 42 dB</td>
<td>105 kg/m²</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>198 19x19x8 colour</td>
<td>± 60%</td>
<td>3.1</td>
<td>32 to 42 dB</td>
<td>105 kg/m²</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1910 19x19x10</td>
<td>80%</td>
<td>2.9</td>
<td>Test report CEBTP N°B232.3.047</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>85%</td>
<td>3.1</td>
<td>Test report CEBTP N°B232.3.047</td>
<td>-</td>
</tr>
<tr>
<td>248 24x24x8</td>
<td>77%</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2411 24x11.5x8</td>
<td>84%</td>
<td>2.9</td>
<td>Test report CEBTP N°B232.3.047</td>
<td>-</td>
</tr>
<tr>
<td>TF30 19x19x10</td>
<td>-</td>
<td>2.3</td>
<td>Test report CEBTP N°B232.3.047</td>
<td>42 dB Test report CEBTP N°BP12.7.6110</td>
</tr>
<tr>
<td>TF40a 19x19x15</td>
<td>-</td>
<td>1.7</td>
<td>Test report CEBTP N°B435.5.014</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Size (cm)</th>
<th>Fire insulation (EI)</th>
<th>Fire integrity (E)</th>
<th>Radiation (EW)</th>
<th>Compressive strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>198 19x19x8</td>
<td>½h P.V.C TICM N°08-V-064</td>
<td>1h P.V.C TICM N°08-V-064</td>
<td>½h P.V.C TICM N°08-V-064</td>
<td>10 N/mm² CSTB N°565-5-1113/1</td>
</tr>
<tr>
<td>1910 19x19x10</td>
<td>½h P.V.C TICM N°08-V-064</td>
<td>1h P.V.C TICM N°08-V-064</td>
<td>½h P.V.C TICM N°08-V-064</td>
<td>-</td>
</tr>
<tr>
<td>248 24x24x8</td>
<td>½h P.V.C STB N°87.26110 (ext.90/1)</td>
<td>½h P.V.C STB N°87.26110</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2411 24x11.5x8</td>
<td>½h P.V.C STB N°87.26110 (ext.90/1)</td>
<td>½h P.V.C STB N°87.26110</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3010 29.8x29.8x9.8</td>
<td>½h P.V.C STB N°87.26109</td>
<td>1½h P.V.C STB N°87.26109</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TF30 19x19x10</td>
<td>½h P.V.C TICM N°13-A-282</td>
<td>1h P.V.C TICM N°13-A-282</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TF60a 19x19x15</td>
<td>1h P.V.EFECTIS France EFR-15-000740</td>
<td>1½h P.V.EFECTIS France EFR-15-000740</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Valid until 1.04.2011

Mechanical strength
- 198 19x19x8
- 199 Cubiver 19.6x19.6x8

The manufacturing specifications and fitting requirements of the various classification certificates must be respected in order to conform to the required characteristics.
PREFABRICATED PANELS in glass bricks

Standard size panels

Description: insulating glass brick panels prefabricated in workshops under ideal conditions offer:
- the advantages of quality:
  - regularity of joins and borders
  - simple method of mixing
- easy + speed of installation

Bricks:
- 195 19x19x5 Flemish (N) clear
- 198 19x19x8 Flemish (N) clear
- other colours and designs from the range are available on request for a supplement (198 only)

Dimensions & Weights:
- see table below (Tolerance ± 1 cm)
- 1 cm joint, 4 cm borders, mortar (White Cement).

Panels can be laid both ways.

<table>
<thead>
<tr>
<th>Items</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size cm</td>
<td>47 x 47</td>
<td>67 x 47</td>
<td>87 x 47</td>
<td>107 x 47</td>
<td>127 x 47</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 8 cm</td>
<td>24 kg</td>
<td>33 kg</td>
<td>42 kg</td>
<td>51 kg</td>
<td>61 kg</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 5 cm</td>
<td>16 kg</td>
<td>23 kg</td>
<td>29 kg</td>
<td>36 kg</td>
<td>43 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items</th>
<th>33</th>
<th>34</th>
<th>35</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size cm</td>
<td>67 x 67</td>
<td>87 x 67</td>
<td>107 x 67</td>
<td>127 x 67</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 8 cm</td>
<td>46 kg</td>
<td>58 kg</td>
<td>71 kg</td>
<td>84 kg</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 5 cm</td>
<td>32 kg</td>
<td>42 kg</td>
<td>51 kg</td>
<td>60 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items</th>
<th>44</th>
<th>45</th>
<th>46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size cm</td>
<td>87 x 87</td>
<td>107 x 87</td>
<td>127 x 87</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 8 cm</td>
<td>76 kg</td>
<td>92 kg</td>
<td>108 kg</td>
</tr>
<tr>
<td>Weights in bricks 19 x 19 x 5 cm</td>
<td>54 kg</td>
<td>64 kg</td>
<td>74 kg</td>
</tr>
</tbody>
</table>

Connecting panels

Description: panels manufactured to order with elimination of 1 or 2 removed borders to make translucent walls with great length.

Bricks: identical to unit standard panel.

Dimensions & Weights: identical to unit standard panel.
- minus 1 or 2 borders of 4 cm.

1 cm joints to be constructed on side.

The panels can only be jointed one way (height or width).

Wall which are 5 cm thick should not exceed 1.5 m².
PREFABRICATED PANELS in glass bricks

Interlocking panels

Description: Prefabricated panels supplied with:
- 2 cm joints between glass bricks;
- 2 borders of 1 cm for joining panels entre les panneaux;
- 2 borders of 5 cm for fixing to jambs on main works.

Bricks:
- 198: 19x19x8 clear flemish
- Others: glass bricks on order in 198 only

Dimensions & Weights: See Table below

Example:  

<table>
<thead>
<tr>
<th>Items</th>
<th>S22</th>
<th>S23</th>
<th>S24</th>
<th>S25</th>
<th>S26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size cm</td>
<td>50 x 42</td>
<td>74 x 42</td>
<td>92 x 42</td>
<td>113 x 42</td>
<td>134 x 42</td>
</tr>
<tr>
<td>Weights</td>
<td>19 kg</td>
<td>28 kg</td>
<td>35 kg</td>
<td>42 kg</td>
<td>50 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items</th>
<th>S27</th>
<th>S28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size cm</td>
<td>155 x 42</td>
<td>176 x 42</td>
</tr>
<tr>
<td>Weights</td>
<td>58 kg</td>
<td>66 kg</td>
</tr>
</tbody>
</table>

Panels made to measurement

- Many solutions in straight or curved walls which can be manufactured following a feasibility study by our Technical Service.

- Incorporation of:
  - tilting chassis
  - ventilation bricks

- Special compositions with:
  - bricks of various shapes and designs
  - coloured bricks

Telecom/Nantes Rézé
Architect: G. & D. PENEAU
Contactor: Desfontaines
Panels made to measure in clear Cross reeded 198.
RECOMMENDATIONS FOR CONSTRUCTION

Please contact us for any advice

- This document is an up to date synthesis of the most modern glass brick models and the various reliable implementation techniques.
- For those working in the construction industry, our technical department and experienced technical sales representatives are on hand to help you.
- Our know-how: La Rochere produce several thousands of square metres per year.

NB
Advice on fitting is given to assist with installing our products and to avoid serious mistakes. They are not covered by the manufacturer warranty, except as regards the conformity of the products. For specific walls, it is highly recommended that you consult a qualified builder.

Making walls

- The glass brick panels are made with reinforced mortar. The glass bricks are assembled with 1 to 3-cm joints and a 4 to 10-cm peripheral border.

Mortar
Composition:
- washed sand with a 0 to 3-mm particle size
- Portland cement CEM II 42.5 to 52.5 (or CEMI) proportioned at 650 kg/m².
Due to the origin of materials, there may be slight variations in the colouring of the mortar.

Maximum Wall Surface

For normal exposure to vibrations, pressure, etc.

<table>
<thead>
<tr>
<th>直 Wall thickness</th>
<th>max. surface</th>
<th>short side max. dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 cm</td>
<td>3 m²</td>
<td>3 m</td>
</tr>
<tr>
<td>8 cm</td>
<td>30 m²</td>
<td>3 m</td>
</tr>
<tr>
<td>10 cm</td>
<td>40 m²</td>
<td>3.5 m</td>
</tr>
</tbody>
</table>

Curved walls

They can be very much higher than the surface of straight walls depending on their dimensions and radius of curvature.

Large walls

For walls larger than above-mentioned, please consult us for feasibility (construction joints and expansion joints may be required).

Calculation of walls and anticipated openings (width/height)

Flats Walls
- Calculation of a size of wall:
  = (number of bricks x size of brick) + (number of joints x size of joint) + 2 borders (Minimum 4 cms each)
- Calculation fixing to rebate (reservation)
  = wall dimension + 2 cm for expansion

Curveds
- Take the measurement on the concave side of the curve and carry on as for a flat wall.

Indepance in relation to main works

- Glass brick walls are not load bearing in order to cope with:
  - their own expansion: 0.5 mm/m for a 50°C variation.
  - the deformation of the main works (transoms, structures, etc.).
- Provide for expansion and independance:
  - in the lower part: 2 to 10 mm supporting joint slightly.
  - on the vertical sides: 10 of compressible material.
  - faces of peripheral borders: 5 to 7 mm of compressible material.

see examples page 12.
Holding to the main works (concerns pre-fabricated panels and traditional assembly)

Note: All glass brick walls must be set back from the main works (never flush with the exterior).

**Fixing to rebate** in the main works with angle frame

**Fixing between angle frame**

**Using a U cannel**

**Fixing recast using steel T bar section**

**Fixing to a cill**

Only for made to measure panels, adapted to your opening size.

**Fixing to head jamb haute**

**Markers** a, b, c, d, e, f, i, see page 14
RECOMMENDATIONS FOR CONSTRUCTION (summary)

**Fire and water peripheral sealing**

All glass bricks walls need to be watertight at the junction with the main works.

**Waterproofing**
- Can be obtained by means of a silicon putty joint the bottom of which is made of an expansion or independence foam joint, or by using special waterproof and compressible joints.
- All glass brick walls must be set back (recessed) from the main structure (never flush with an outside wall to avoid rainwater flowing over the glass wall).

**Fire resistance**
Requires the use of recognised systems and products.

**Holding towards main works** (see sketch page 13)

- Applicable to all assembly methods (except CUBIVER), but the holding to the main works must take into account:
  - the nature of the support
  - the dimension of the glass brick walls.

**Brick-by-brick assembly** - Exposure time approximately 5 h/m²

- Position a support joint (a or b) on the ground.
- Mount the first row of bricks on a border-bed of mortar reinforced with 1 to 3 stainless steel bars.
- Place the vertical steel bars suspended to the transom and fill in the vertical joints with mortar.
- Use spacer pegs if needed which will give an equal joint between each brick.
- Overlay with a bed of mortar and repeat row by row. Finish the visible joints for final aspect as soon as the mortar sets. The white assembling mortar of LA ROCHERE makes this operation easier.
- Installation guide on request.

**Accessories for fixing loose blocks and precast panels**

- a Bitumen expansion foam 60 x 8 mm (thickness 5 or 8 cm) to cill.
- b Bitumen expansion foam 80 x 8 mm (thickness 8 cm) to cill.
- c Expansion Foam 94 x 10 mm to the head and jambs (thickness 10 cm).
- d Expansion Foam 74 x 10 mm to the head and jambs (thickness 8 cm).
- e Independence Expansion joint 35 x 5 mm fixing to rebate (any thicknesses of bricks).
- f Screw pin (goujon).
- g Steel fixing bracket.
- h Galvanised box (Incorporated into the manufacturing of the panel).
- i T section steel fixing.
- j Lifting Socket (Incorporated into the manufacturing of the panel).
- k Lifting Ring.
- l 8 cm Spacer Peg (Available in 10 cms) for joint of 1 cm.
OUR SYSTEMS FOR INSIDE WALLS

Lumikit

■ Assembly of 19 x 19 x 8 bricks on a wooden framework for an interior partition wall.

Do not use in damp environment

Specific documentation on request.

Cubiver2®

■ The exclusive Cubiver2® system makes assembling glass bricks accessible to everyone. A quick guiding and cementing system makes it easy to obtain a smooth finish (max. dimensions: 3 x 2.60 m).

Easy, Quick, Stylish Design

Assembly time is approximately 1h30/m². Calculate the number of bricks required for building a wall as follows:
The height and length of the wall can be calculated by multiplying the number of Cubiver bricks by 196 mm + 40 mm (overall dimensions with the reference bands).
Example: 10 bricks, 196 x 10 + 40 = 2000 mm or 2 m.
Before starting assembly, check the floor is perfectly flat and the walls are perfectly vertical.

18 models of bricks 19.6 x 19.6 x 8 cm, see page 4 and 6, identified by JC.

A special Cubidouche kit is also available for shower walls.

3 dimensions available:
- 82.4 cm wide x 200 cm height
- 102 cm wide x 200 cm height
- 121.6 cm wide x 200 cm height

Specific documentation on request.
to Saint Etienne
Architect: Lévêque - Rivière - Dudzik
Contractor: GFC / Sobriver
Flemish bricks HU 198