Thermal Insulation

Cellular Glass
GLAPOR Werk Mitterteich GmbH

- D-95666 Mitterteich
  - Production Plant
    - Cellular Glass Boards
    - Cellular Glass Gravel
  - Manufacturing
  - R&D
  - Engineering
GLAssPORes - Products

Cellular Glass - Boards

Cellular Glass - Gravel
Arguments for Cellular Glass

Why to choose GLAPOR foam glass products
- High compressive strength
- Lightweight
- Fire resistant
- Frost resistant
- Resistant to fungi and mould
- Resistant to rodents
- Saves natural resources
- 100% recycled glass

GLAPOR foam glass boards
- Non-compressible
- Vapour-proof
- Available in different board sizes

GLAPOR foam glass gravel
- Zero-capillary action
- Simplifies the floor construction
- Flexible in regards to installation heights
Cellular Glass - Production

„UPCYCLING“

grinded glass (powder)
Cellular Glass in Residential Buildings

1. Insulation under the foundation slab
2. Warm roof as metal roof without thermal bridge
3. Thermal insulation for terraces and balconies
4. Flat roof insulation for extensive and intensive planting
5. Load-bearing thermal insulation under the foundation slab with perimeter insulation brick and base insulation
6. Load-bearing thermal insulation under the foundation slab with perimeter insulation brick and perimeter insulation
Cellular Glass in Industrial Buildings

- Warm roof as metal roof without thermal bridge
- Flat roof insulation on trapezoidal steel sheets with waterproofing
- Flat roof insulation for parking decks and roofs above courtyard cells
- Thermal insulation of the floor slab with strip foundation
- Thermal insulation under scored e.g. for fork lift truck traffic and racking loads
- Insulation under the floor slab
Cellular Glass in Non-Residential Buildings

1. Flat roof insulation for parking decks and roofs above courtyard cellars
2. Flat roof insulation for extensive and intensive planting
3. Insulation under the floor slab
4. Thermal insulation under screed for walkable areas
5. Thermal insulation under screed
6. Load-bearing thermal insulation under the foundation slab with perimeter insulation brick and base insulation
Cellular Glass in Redevelopment & Renovation

- Warm roof as metal roof without thermal bridge
- Lightweight fill on existing arches
- Thermal insulation of basement walls
- Thermal insulation under screed
- Interior insulation
Cellular Glass in Special Constructions

Formable lightweight fills on underground garages, tunnels, enclosures, and underground structures.

Thermal insulation for waterproofing as system solution with a combination of GLAPOR insulating gradient boards and GLAPOR lightweight gravel.

Lightweight construction.
## Cellular Glass Boards

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Density</td>
<td>100 – 180 kg/m³</td>
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<tr>
<td>Thermal conductivity $\lambda$</td>
<td>0,052 – 0,066 W/mK</td>
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<tr>
<td>Compressive strength</td>
<td>0,60 – 1,7 N/mm²</td>
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<tr>
<td>Dimensions</td>
<td>length / width (max.) 3,0 x 1,5 m</td>
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<tr>
<td>Thicknesses</td>
<td>40 - 160 mm</td>
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</tbody>
</table>
Sihlpost Zürich (CH),
Thermal insulation inside air shaft
2900 m² Cellular Glass Boards
Projects…

Playground
underneath: parking area
& service / supply rooms
Thickness: 60 – 300 mm

Football stadium Warschau (PL),
Thermal insulation
33.200 m² Cellular Glass Boards
Projects...

Airport Berlin BBI (DE)
Inclined thermal roof insulation, thickness 100 – 650mm
4.500m² Cellular Glass Boards

Airport main entrance; underneath the railway station
Cellular Glass Boards - Construction
Cellular Glass Boards – Inclined flat roof

Customized Manufacturing Layout / Kalkulation
Itemized part list
Cellular Glass Gravel

- **Bulk density**: 105 – 175 kg/m³
- **Thermal conductivity** $\lambda$: 0.78 – 0.12 W/mK
- **Compressive strength**: 0.4 – 1.2 N/mm²
- **Layer Thicknesses**: 15 - 300 cm
Cellular Glass Gravel

- Easy & fast to construct
- Reduction of working steps
- Fault-tolerant

Example:
Insulation layer under a base plate for a 1000 m² hall
Installation time of GLAPOR Gravel ~ 8 hours
Projects…

Triple Sports Hall of secondary school Brandenburg, Thermal insulation under floor slab 725 m³ Cellular Glass Gravel
Castle Friedrichsburg, Thermal insulation last ceiling 175 m³ Cellular Glass Gravel
Small Olympia Hall in Munich,
Lightweight infill
800 m³ Cellular Glass Gravel
Bridge called „Löwenbrücke“ in Bamberg,
Bridge counter bearing, to avoid compression setting
1000 m³ Cellular Glass Gravel
Projects…

Tivoli Hotel und Congress Center,
Surface design on parking roof with walkways and greens
1400 m³ Cellular Glass Gravel
Projects…

Swarowski Kristallwelten,
Landscaping
1,100m³ Cellular Glass Gravel
Projects…

Leonhardsplatz Innsbruck (A),
Surface design on parking roof with walkways and greens
3000 m³ Cellular Glass Gravel
Cellular Glass Gravel - Delivery
Cellular Glass Gravel - Construction

**Excavation**
The load bearing (compacted) ground should be slightly raised in the middle.

**Geotextile**
Lay geotextile as separator, overlapping 10 cm. In the edge area allow enough overlap so that the fill can be covered afterwards.

**Depositing**
The loose foam glass gravel is deposited directly in the construction site. A crane is necessary when using a textile chute or for delivery of big bags.

**Distribution - GLAPOR foam glass gravel**
Gravel is deposited from the back to the front by means of an excavator shovel or manually in order not to affect the already made ballast bed.

**Compaction**
The compaction of the GLAPOR gravel layer is executed by a light plate vibrator recommended by Glapor® with a factor of 1,3 : 1.

**Separation layer and formwork**
The geotextile laid in the earth area is to be folded over the finished fill. Then the separation layer for the floor slab can be installed properly.
Cellular Glass Gravel - Construction
„RDS“ the perfect insulation solution
“RDS“ the perfect insulation solution

SUSTAINABLE | ENVIRONMENTALLY FRIENDLY | ECONOMICAL
WE INSULATE THE FOUNDATION FOR YOUR FUTURE!

THE PERFECT INSULATION SOLUTION
The first step for your warm and dry home!

Long Lasting – Weatherproof, resistant to rodents and insects
Permanent Insulation – Protects against water (rain) and cold
Purely Mineral – 100 % recycled waste glass, high compressive strength
Labour and Time Saving Construction – Simple, fast, clean, no formwork required