LIGHTWEIGHT CONCRETE TECHNOLOGY AND APPLICATION

SIKA EGYPT
ENG. ASHRAF ELZINY
Technical & Export Manager
AREA OF APPLICATION

As a lightweight, low-viscous filling material for:

- Building as thermal insulating layer
  (Measuring indicative thermal conductivity test in BS 874 part 3.2)

- Shutdown sewerage.

- Fill blocks, spaces around pipes, .......etc.
LIGHTWEIGHT CONCRETE
TECHNOLOGY AND APPLICATION

Cellular Concrete System

Foam Generator  Consulting  Foaming Agent

Cellular Concrete - System

Production of Mortar and Concrete with Preformed Foam

Cellular Concrete  Ready Mixed Mortar
LIGHTWEIGHT CONCRETE
TECHNOLOGY AND APPLICATION

Lighter than water!
Composition of Cellular Concrete

- **Foam**: Vol % 100, Dry unit weight 1.6 kg/l
- **Sand**: Vol % 80, Dry unit weight 1.2 kg/l
- **Cement**: Vol % 40, Dry unit weight 0.8 kg/l
- **Water**: Vol % 20, Dry unit weight 0.5 kg/l
# Cellular Concrete - Properties

<table>
<thead>
<tr>
<th>Fresh Concrete</th>
<th>Hardened Concrete</th>
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<tbody>
<tr>
<td>- flowable</td>
<td>- Adjustable in unit weight and strength</td>
</tr>
<tr>
<td>- pumpable</td>
<td>- durable and stable in shape</td>
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<tr>
<td>- easy workability</td>
<td>- Thermal insulating</td>
</tr>
<tr>
<td>- no compaction necessary</td>
<td>- higher resistance to fire</td>
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<tr>
<td></td>
<td>- increased shrinkage</td>
</tr>
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<td></td>
<td>- not decomposable</td>
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Compressive Strength of Cellular Concrete Depending on Dry Unit Weight

Compressive strength in MPa vs. Dry Unit Weight in kg/l
## Components of Cellular Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Usual Materials</th>
</tr>
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<tbody>
<tr>
<td>cement</td>
<td>CEM I 32,5 R CEM I 42,5 R</td>
</tr>
<tr>
<td>filler</td>
<td>limestone flour fly ash</td>
</tr>
<tr>
<td>aggregates</td>
<td>sand 0 – 2 mm 0 – 4 mm</td>
</tr>
<tr>
<td>foam agent</td>
<td>SB 2 - Organic tenside</td>
</tr>
<tr>
<td>stabilizer</td>
<td>ST 3 - powder, (methyl cellulose)</td>
</tr>
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</table>
Mix Design of Cellular Concrete

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Cement content</strong></td>
<td>300 - 350 kg/m³</td>
</tr>
<tr>
<td><strong>Water content</strong></td>
<td>150 l/m³ with foam generator SG 70</td>
</tr>
<tr>
<td></td>
<td>180 l/m³ with foam generator SG S 9</td>
</tr>
<tr>
<td><strong>Foam unit weight</strong></td>
<td>0.03 – 0.06 kg/l with foam generator SG 70</td>
</tr>
<tr>
<td></td>
<td>0.03 – 0.05 kg/l with foam generator SG S 9</td>
</tr>
</tbody>
</table>
Production on the Site

Concrete mixing plant
- sand
- cement
- water

(Compulsory mixer)

On the site with foam generator SG 70
- foam agent SB 2
- water

Foam production with foam generator SG 70
FOAM AGENT SB2

FOAM AGENT FOR THE PRODUCTION OF POROUS LIGHTWEIGHT CONCRETE BY FOAMING METHOD

Technical Data

Colour and state: blue-green liquid
Density (20°C): 1.04 g/cm³
Chloride content: < 0.1 %
Recommended dosage: 150 – 230 g / 100 l foam
LIGHTWEIGHT CONCRETE
TECHNOLOGY AND APPLICATION

Foam Generator SG 70
Foam production with SGS 9
Applications: Re-Filling of Trenches and Excavations

- filling of working spaces at the side of pipes
- avoiding consolidation settlement
Applications: Filling of Sewage Pipes

- Pouring directly in the shaft
- Complete filling of the cross-section

Cellular concrete

street

< 50 m
Applications: Cellular Concrete below Basement Slab
Applications: Filling between Floor Timbers
Applications: Roof Surface with Cellular Concrete as levelling layer