SikaGrout®-300 Technology

Technical Details

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Grey</td>
</tr>
</tbody>
</table>
| Granulometry (aggregate range and grading) | SikaGrout®-311: 0.1 – 1 mm  
SikaGrout®-314: 0.1 – 3 mm  
SikaGrout®-318: 0.1 – 8 mm |
| Storage/Shelf life                | 6 months/Store in dry conditions |
| Adhesive tensile strength         | 3.0 N/mm²     |
| Packaging                         | 25 kg bags    |
| Density (20 °C)                   | 2.3 kg/l      |
| Mechanical strength (28 days/20 °C) | Compressive strength: ~ 80 MPa  
Flexural strength: ~ 11 MPa |
| Modulus of elasticity (static)    | 37 000 N/mm²  |
| Coefficient of thermal expansion  | 12 x 10^{-6} per °C |

For additional information see Product Data Sheet SikaGrout®-311/-314/-318.

Also available from Sika

SikaGrout®-300 Technology

for high Precision, Non-Shrink, Expanding, Natural Aggregate Grout

Your local Sika Company

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SikaGrout®-300 System
System Applications

- Heavy Equipment / Machinery Bases
- Anchor Bolts / Bars
- Bedding Joints
- Bearing Plates and Pads
- Rail / Post Fixing
- Void Filling
- Pre-cast Column Bases
- Steel Frame Bedding
- Sealing around Penetrations
- Rail Fixing and Bedding
- Bridge and Deck Joints
- Concrete Repair and Restoration
Performance Requirements
Understanding Grouting Specification Details

Strength Development

Requirements
- Good compressive strength development:
  - High early strength (24 hrs) >50 MPa and final strength >80 MPa
  - At different temperatures
  - At different mixing ratios (for different consistency in use)
  - In different curing conditions

Test Reports
- Measurements to the standards: ASTM C-78, ASTM C-109 (American)
- DIN EN 196-1 (German / European)

Shrinkage Behaviour

Requirements
- Shrinkage < 1.2 mm/m
- No shrinkage cracks by the “Bänziger Block” test
- Effective non-shrink

Test Reports
- Shrinkage measurements according to DIN Standard 52450 (German)

Note: In all applications correct curing improves the results.

Expansion Rate

Requirements
- Complete and defect free filling of the void
- Positive expansion within 24 hrs (i.e. expansion was in the fresh mortar state)
- No volume loss

Test Reports
- Expansion measurements according to ASTM C 627-87 and CRD C 613 standard (American)
- Advantages: SikaGrout®-300 expands slower initially which allows more time for application and therefore expansion in place will give better results on site.

Durability in Service

Requirements
- High Freeze/Thaw De-icing Salt resistance (400 cycles +20 °C/–20 °C)
- High alkali resistance
- High sulphate resistance
- High density
- Low CO₂ and HO permeability

Test Reports
- Measurements correspond to the standards ASTM C 666-85 (American), LPM BE II (Swiss), DIN-Standard 52450 (German)

E-modulus of Grout

For a high load capacity and minimum deformation a high E-modulus is required.

Note:
Elastic modulus shows how much stress (in theory) is necessary to produce 100% deformation.

Example
SikaGrout®-300 has an E-modulus of approximately 37,000 N/mm². Under the same load a grout with an E-modulus of only 20,000 N/mm² would have almost doubled the deformation.

Creep (irreversible deformation under load over time)
The hydration of a cementitious material is very important. With full hydration the creep can be minimized and therefore negated. Correct curing is therefore a prerequisite for success.

SikaGrout®-300 has minimal creep.
Application Requirements
Understanding Site Conditions

Different Application Thicknesses

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<th>Thickness</th>
<th>Applicable SikaGrout®</th>
<th>Suitable Aggregate Size</th>
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<tr>
<td>160 mm</td>
<td>SikaGrout®-318</td>
<td>3–12 mm</td>
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<td>60–160 mm</td>
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<td>4–8 mm</td>
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Additional Note for Guidance
The minimum application thickness should be \( \frac{3}{4} \times \text{diameter (d)} \) of the maximum aggregate size in mm. The maximum application thickness/layers should be approx. \( \frac{10}{3} \times \text{diameter (d)} \) same as above in mm.

Crack Prevention

**Bänziger Block Requirements for High Performance Grout**
- No bleeding
- No segregation
- No air bubbles
- No delamination
- No shrinkage cracks even between sections of variable thickness

**Test Reports**
- All tests are carried out on the “Bänziger Block” (developed at Sika, Switzerland).

**Note:** For good adhesion adequate surface preparation of substrates is important.

Flow Properties

**Requirements**
- Workability time (flow table spread) minimum 30 min.
- Slump loss < 10 % after 30 min. (compared to 10 min. value)
  - e.g. FTS (10 min.; 0 strokes) = 300 mm and FTS (30 min.; 0 strokes) > 270 mm
  - SikaGrout®-311
  - FTS (10 min.; 0 strokes) = 320 mm
  - SikaGrout®-314
  - FTS (10 min.; 0 strokes) = 300 mm
  - SikaGrout®-318
  - FTS (10 min.; 0 strokes) = 250 mm

**Test Reports**
- Measurements correspond to the standards DIN 1048 (German), ASTM C 230/C 627 and CRD-C 611 (American).

Workability Time

**Requirements**
- Flow channel; 5 min. after mixing:
  - flow distance ≥ 550 mm
- 30 min. after mixing:
  - flow distance ≥ 450 mm

**Test Reports**
- Measurements and limits of the flow channel according to the guidelines of EN 13395-2 standard (European Norm).

Application in larger Volumes

In larger volume applications it is possible to achieve similar application and performance characteristics (workability time), flow properties and strength development using SikaGrout by the addition of 30–40 % by weight of clean aggregate (4–8 and/or 8–16 mm).

Comparison between SikaGrout®-314 and SikaGrout®-314 and aggregate 4–8 mm (35 weight %):

**Strength Development**

**Flow**

**Expansion**

Note:
For good adhesion adequate surface preparation of substrates is important.
Two-spindle hand mixing unit for smaller quantities:
e.g. Collomatic RGE 162 DUO

Use Professional Mixing Equipment

Portable compulsory mixer for larger quantities:
e.g. Collomatic 65/2K-3, Creteangle, etc.

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