

# SikaGrout<sup>®</sup> HES

## High early strength and rapid set cementitious grout

Construction

<b>Description</b>	<p>SikaGrout HES is a ready mixed, high quality, grout that sets rapidly with high early strengths.</p> <p>SikaGrout HES is a blend of high alumina cement, selected and graded aggregates, and Sika admixtures, enabling it to achieve high strengths in short time frames.</p>
<b>Uses</b>	<p>SikaGrout HES is used in a wide range of applications where rapid strength is required, such as:</p> <ul style="list-style-type: none"> <li>• Microconcreting for concrete repair work.</li> <li>• Machine bedplates</li> <li>• Anchor bolts.</li> <li>• Bridge bearing pads.</li> <li>• Pre-cast concrete sections.</li> <li>• Crane rail soleplates.</li> <li>• Cavities, gaps and recesses.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• High early strengths (even at low temperatures).</li> <li>• High 28 day strengths.</li> <li>• Good flow characteristic.</li> <li>• Rapid set times and rapid strength gain.</li> <li>• Adjustable consistency.</li> <li>• Does not segregate or bleed.</li> <li>• Good impact, vibration and thermal resistance.</li> <li>• Non corrosive to steel or iron.</li> </ul>
<b>Shelf life</b>	<p>Stored in unopened original containers protected from direct sunlight and frost, shelf life is at least nine (9) months.</p>
<b>Instructions for Use</b>	
<b>Surface Preparation</b>	<p>Correct and thorough surface preparation is essential to achieve the high performance qualities of SikaGrout HES.</p> <p>All surfaces must be clean, sound and free from dust, ice, oils, grease or other surface contaminants such as curing membranes and form release agent etc. Bolt holes and fixing pockets should be free of dirt and debris by air blasting. For maximum bond, surfaces should be abraded or roughened, preferably by mechanical means such as needle gun, grit blasting, grinding etc.</p> <p>All prepared surfaces must be saturated with water several hours prior to grouting, ensuring it is free of any surface water or puddles.</p>
<b>Formwork</b>	<p>The formwork used must be leak proof to allow for free flowing SikaGrout HES. The formwork should be arranged so that the grout head is maintained on the side above the level of the underside of the base plate. This will allow gravity flow to completely fill the void to be grouted.</p> <p>Formwork should be coated with form oil to allow easy removal of forms. Ensure adequate air holes are provided.</p>
<b>Temperature control</b>	<p>Temperature affects setting time and rate of increase for strength. For optimum performance maintain grout, concrete and/or steel substrates within the range of 18-25°C prior to, during, and for 48 hours after placement of the grout.</p>

## Application

### Mixing equipment

SikaGrout HES must be mechanically mixed using a mechanical grout mixer or a suitable drum mixer. The grout mixer will reduce the chances of the mix becoming lumpy or aerated.

Smaller quantities should be mixed in clean drum using an electric drill and spiral drill and spiral mixer at a speed of approximately 500 rpm.

DO NOT MIX BY HAND.

### Mixing Method

- 1) Flowable grout, add 3.2 to 3.5 litres of water per 20 kg bag.  
Trowellable grout, add 2.5 to 2.8 litres of water per 20kg bag.
- 2) Add the powder component to approximately 70% of the total amount water component while mixing.
- 3) Add the remaining 30% of the water component to the grout at a steady rate while continuing to mix.
- 4) Mix until the grout appears homogenous (3-5 minutes). Allow to stand so any entrapped air can escape. Do not add more water to increase flow of the grout if a mix has stiffened due to time delays. If the grout is unworkable discard.

### Placement

SikaGrout HES can be placed by gravity flow or by pump. It is essential that proper placing is completed without problems. Sufficient labour, grout and equipment must be present to ensure continuous placement.

#### Gravity Flow

Mixed grout should be poured one side of the void to avoid air entrapment. Grout is best poured over short distances to ensure this. Use a suitable header box, maintaining the grout head at all times to ensure continuous flow.

To facilitate grout compaction and top plate contact, use rodding, tamping or flexible strapping in short strokes while maintaining an adequate head of grout. Do not vibrate as this will cause segregation. Any adjacent machinery or equipment causing vibration should be shut down until initial set.

#### Pumping

When pumping SikaGrout HES, ensure the pump is suitable for the grout consistency and for the distance and height it is to be pumped. A positive displacement pump is recommended. Place grout by pumping into the farthest corner, filling the space gradually. Ensure that air is not entrapped under the base plate.

### Placement Thickness

Recommended thickness of SikaGrout HES in one pour is 20mm to 50mm. Minimum thickness is 10mm. Maximum thickness in one pass is 100mm. Any grout pour that exceeds this should be done in stages, or have stone aggregate added to it, to reduce the exothermic heat. Contact Sika's Technical Department for further information.

### Aggregate Addition

Coarse aggregate can be added to mixed SikaGrout HES to achieve a stronger grout, to increase the thickness of grout placed in one pass, or to increase yield.

It is recommended that aggregate size be 10mm, however as a guide the maximum aggregate size should not be more than 1/5 of the thickness of the section to be cast. The aggregate shape, and the quantity added, will effect the workability of the mix. Smooth rounded aggregate is found to produce the most workable mix.

The recommended maximum aggregate addition rate is 20kg per 20kg bag of SikaGrout HES

<b>Curing</b>	Suitable curing methods such as plastic sheet, wet hessian, liquid membrane (eg, Antisol curing membranes) etc. must be used to protect the freshly applied grout from the drying effects of sun and wind. Curing must commence immediately after placement, and continue for at least 7 days. Curing is vital to the ultimate performance of grout as it allows optimum strength development and ensures tight contact with the baseplate.
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<b>Cleaning</b>	Remove uncured SikaGrout HES from tools and equipment with water. Hardened material can only be removed mechanically.
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### Technical Data (Typical)

<b>Form</b>	Grey Powder			
<b>Granulometry</b>	0-2.0 mm			
<b>Density</b>	2200 kg/m <sup>3</sup> approx. (dependent on water addition rate)			
<b>Pot life @ 20°C</b>	20 minutes approx.			
<b>Application temperature</b>	Minimum 5°C Maximum 35°C			
<b>Colour</b>	Dark grey (when mixed)			
<b>Yield @ 20°C</b>		<b>Trowellable</b>	<b>Flowable</b>	
	Approximate yield per 20kg bag	8.5 litres	9.5 litres	
	Approximate number of 20kg bags required for 1m <sup>3</sup> of grout	118	105	
<b>Workability (Tested to AS1478.2-2005)</b>	50 secs (flowable consistency)			
<b>Setting times (hrs : mins) (tested to AS2350.4-1999)</b>	Flowable	<b>Temp</b>	<b>Initial</b>	<b>Final</b>
		10°C	1:10	1:25
		20°C	0:50	0:60
		30°C	0:40	0:50
<b>Strength Properties (tested to AS2350.11-2000)</b>	Compressive strength (MPa) (Tested at 20°C)	<b>Age</b>	<b>Trowellable</b>	<b>Flowable</b>
		2 hours	>25	>20
		4 hours	>35	>30
		1 day	>40	>35
		28 days	>60	>55
<b>Packaging</b>	20 kg bag			

# Construction



**Important Notes**

- In view of the effects of “conversion” i.e., loss of strength over time, to high-alumina cement mixes, SikaGrout HES is not recommended to be used for critical structural works with long service life.
- Do not mix SikaGrout HES with any Portland cement based materials.
- For detailed information on grouting application and guidelines, refer to **Sika Grouting Systems**.
- Store SikaGrout HES in dry conditions in unopened original packaging.
- Never apply to a dry substrate.
- Trials should always be conducted when adding a recommended Sika Admixture to Sika Grout HES to determine the optimum dosage rates under local conditions.

**Handling Precautions**

- Avoid contact with skin and eyes.
- Wear protective gloves and eye protection during work.
- If skin contact occurs, wash skin thoroughly.
- If in eyes, hold eyes open, flood with warm water and seek medical attention without delay.
- A full Material Safety Data Sheet is available from Sika on request.

**Important Notification**

The information, and, in particular, the recommendations relating to the application and end-use of Sika’s products, are given in good faith based on Sika’s current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject of our terms and conditions of sale. Users should always refer to the most recent issue of the Technical Data Sheet for the product concerned, copies of which will be supplied on request.

PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.

