

## PRODUCT DATA SHEET

# Sikadur<sup>®</sup>-42+ HE Cold Climate

High-performance 3-part epoxy grout

### DESCRIPTION

Sikadur<sup>®</sup>-42+ HE Cold Climate is a 3-part, high-performance, moisture-tolerant epoxy grout which develops high early strength. It is suitable for many static or dynamic precision grouting applications. It has a layer thickness of 10 mm to 100 mm and an application temperature range of +5°C to +30°C.

### USES

Sikadur<sup>®</sup>-42+ HE Cold Climate may only be used by experienced professionals.

The Product is used for high-strength grouting and fixing of the following elements:

- Starter bars
- Anchors
- Tie rods
- Fasteners
- Crash barrier posts
- Fence and railing posts

The Product is used for precision under-grouting and bedding of the following elements:

- Machine bases, base plates for light and heavy machinery including heavy-impact and vibratory machinery, reciprocating engines, compressors, pumps and presses
- Bridge bearings

The Product is used for repairing the following concrete elements:

- Spalled concrete structures
- Industrial floor slabs
- Hole and void filling
- Runways
- Hardstandings
- Car park decks

The Product is used for interior and exterior applications.

### FEATURES

- Ready-to-mix, pre-batched units
- Good flowability
- Tolerant to substrates with high moisture content
- Good mechanical resistance
- Very low shrinkage
- Low coefficient of thermal expansion
- Good creep resistance
- Good resistance to vibration
- High reactivity for low temperature application (+5°C) and fast strength gain
- Impermeable to most liquids and water vapour

### SUSTAINABILITY

- Conforms with LEED v4 MR credit: Building product disclosure and optimization — Material ingredients (option 2)
- Conforms with LEED v4 MR credit: Building product disclosure and optimization — Environmental Product Declarations (option 1)
- Specific Environmental Product Declaration (EPD) in accordance with EN 15804.

### CERTIFICATES AND TEST REPORTS

- CE marking and declaration of performance based on EN 1504-6:2006: Products and systems for the protection and repair of concrete structures - Anchoring of reinforcing steel bar.

## PRODUCT INFORMATION

<b>Composition</b>	Epoxy resin, selected fillers and aggregates	
<b>Packaging</b>	Pre-batch unit (Part A+B+C)	5.1 kg, 20.4 kg or 142.5 kg
	Part C sold separately	4.41 kg or 17.65 kg
	Refer to the current price list for available packaging variations.	
<b>Shelf life</b>	24 months from date of production	
<b>Storage conditions</b>	The Product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging. Refer to the current Safety Data Sheet for information on safe handling and storage.	
<b>Appearance and colour</b>	Grey	
<b>Density</b>	Part A+B+C mixed	2 300 kg/m <sup>3</sup>

## TECHNICAL INFORMATION

<b>Effective bearing area</b>	>85 %	(ASTM C1339)
<b>Compressive strength</b>	<b>Curing time</b>	<b>+5 °C curing temperature</b>
	1 day	15 N/mm <sup>2</sup>
	3 days	78 N/mm <sup>2</sup>
	7 days	91 N/mm <sup>2</sup>
	28 days	92 N/mm <sup>2</sup>
<b>Modulus of elasticity in compression</b>	21 000 N/mm <sup>2</sup>	(EN 196-1)
<b>Flexural-strength</b>	30 N/mm <sup>2</sup>	(ISO 178)
	27 N/mm <sup>2</sup>	(ASTM C580)
<b>Modulus of elasticity in flexure</b>	18 000 N/mm <sup>2</sup>	(ASTM C580)
<b>Tensile strength</b>	15 N/mm <sup>2</sup>	(EN ISO 527-2)
	12 N/mm <sup>2</sup>	
<b>Tensile adhesion strength</b>	Slant shear >19 N/mm <sup>2</sup> (concrete failure)	(ASTM C882)
	8.5 N/mm <sup>2</sup> (on steel)	(EN 1542)
	4 N/mm <sup>2</sup> (concrete failure)	
<b>Creep</b>	0.98 % at 4.14 N/mm <sup>2</sup> (600 psi) / 31 500 N (+60 °C)	(ASTM C1181)
	0.81 % at 2.76 N/mm <sup>2</sup> (400 psi) / 21 000 N (+60 °C)	
<b>Elongation at break</b>	0.1 %	(EN ISO 527-2)
<b>Heat deflection temperature</b>	Cured for 7 days at +23 °C	+53 °C (ASTM D648)
<b>Shrinkage</b>	0.18 %	(DIN 52450)
<b>Coefficient of thermal expansion</b>	-30 °C to 0 °C	2.01 × 10 <sup>-5</sup> 1/K
	0 °C to +30 °C	2.38 × 10 <sup>-5</sup> 1/K
	+30 °C to +60 °C	2.05 × 10 <sup>-5</sup> 1/K
<b>Service temperature</b>	Maximum	+60 °C
	Minimum	-40 °C
<b>Water absorption</b>	Coefficient W, cured 7 days	0.018 % (ASTM C413)

## APPLICATION INFORMATION

<b>Layer thickness</b>	Maximum	100 mm	
	Minimum	10 mm	
<b>Peak exotherm</b>	Tested at + 23 °C	+38 °C	(ASTM D2471)
<b>Flowability</b>	160 mm (23°C after 5 min) Flow channel		(EN 13395-2)
	270 mm (23°C) Slump test		(EN 13395-1)
	6/15 seconds		(ASTM C1339)
<b>Material temperature</b>	Maximum	+30 °C	
	Minimum	+5 °C	
<b>Ambient air temperature</b>	Maximum	+30 °C	
	Minimum	+5 °C	
<b>Mixing ratio</b>	Part A : B : C	4 : 1 : 32.5 (by weight)	
	Liquid (A+B) : solid (C)	1 : 6.5 (by weight)	
	Depending on the project, the amount of Part C can be increased as follows:		
	Part A : B : C	4 : 1 : 37.5 (by weight)	
	Liquid (A+B) : solid (C)	1 : 7.5 (by weight)	
	For further information contact Sika Technical Services.		
<b>Dew point</b>	Beware of condensation. Substrate temperature during application must be at least +3 °C above dew point.		
<b>Substrate temperature</b>	Maximum	+30 °C	
	Minimum	+5 °C	
<b>Substrate moisture content</b>	<b>Substrate</b>	<b>Test method</b>	<b>Moisture content</b>
	Cementitious substrates	Calcium carbide method (CM-method)	≤4 %
No rising moisture (ASTM D4263, polyethylene sheet)			
<b>Pot Life</b>	Pot life begins when all parts have been mixed. It is shorter at high temperatures and longer at low temperatures. The greater the quantity mixed, the shorter the pot life.		
	To obtain longer workability at high temperatures, the mixed adhesive may be divided into smaller quantities. Alternatively, if the application temperature is above +20°C, chill parts A+B before mixing.		
	<b>Temperature</b>	<b>Time</b>	
	+5 °C	100 minutes	
	+15 °C	80 minutes	
+23 °C	60 minutes		

## BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY

#### CONCRETE

Concrete must be at least 28 days old. Substrates must be sound, clean, dry or matt damp but free of standing water. Substrates must be free of contaminants such as ice, dirt, oil, grease, coatings, laitance, efflorescence, surface treatments and loose friable material.

#### STEEL

Surfaces must be sound, clean, dry and free of contaminants such as dirt, oil, grease, coatings and loose friable material.

### SUBSTRATE PREPARATION

#### IMPORTANT

##### **Reduced adhesion due to surface contamination**

Surface contaminants such as dust and loose material, including the contaminants generated during substrate preparation, can reduce the Product's performance.

Before applying the Product, clean thoroughly all substrate surfaces using vacuum or dust removal equipment.

#### CONCRETE

Suitable techniques for substrate preparation include the following:

- Abrasive blast cleaning
- High-pressure water blasting
- Needle gunning
- Scabbling
- Bush hammering
- Grinding

Prepare the substrate mechanically using a suitable technique.

Clean any pockets or holes for structural fixings to remove any debris.

The substrate has an open-textured, gripping surface profile.

#### STEEL

Suitable techniques for substrate preparation include the following:

- Abrasive blast cleaning
- High-pressure water-blasting
- Grinding

Prepare the substrate mechanically using a suitable technique.

The substrate has a bright metal finish with a surface profile to satisfy the necessary tensile adhesion strength requirement.

### SHUTTER FORMWORK

#### Preconditions

Where formwork is to be used, all formwork must be of adequate strength, treated with release agent and sealed to prevent leakage.

Prepare the formwork to maintain a minimum 100 mm grout head to assist with placement.

Note: A grout box equipped with an inclined trough attached to the formwork will also improve the grout flow and reduce air voids.

### MIXING

#### IMPORTANT

##### **Poor workability and unfavourable handling time due to wrong mixing**

When using multiple units during application, do not mix the following unit until the previous unit has been used.

#### PRE-BATCHED UNITS

1. **IMPORTANT** Mix full units only. Prior to mixing all parts, mix Part A (resin) briefly using a mixing spindle attached to a slow speed electric mixer (max. 300 rpm).
2. Add Part A to Part B (hardener) and mix Parts A+B continuously for at least 3 minutes until a uniformly coloured smooth consistency mix has been achieved.
3. While mixing Parts A + B, gradually add Part C (aggregate).
4. **IMPORTANT** Do not mix excessively. Mix until a uniform mix is achieved.

#### BULK PACKAGING

1. Prior to mixing all parts, mix Part A (resin) and Part B (hardener) briefly using a mixing spindle attached to a slow speed electric mixer (max. 300 rpm).
2. Add the parts in the correct proportions into a suitable mixing container.
3. Mix Parts A+B continuously for at least 3 minutes until a uniformly coloured smooth consistency mix has been achieved.
4. While mixing Parts A + B, gradually add the correct proportion of Part C (aggregate).
5. **IMPORTANT** Do not mix excessively. Mix until a uniform mix is achieved.

### APPLICATION

#### IMPORTANT

##### **Damage due to excessive long-term load**

Sikadur® resins are formulated to have low creep under long-term load. However, due to the creep behaviour of all polymer materials under load, the long-term structural design load must account for creep.

1. Ensure that the long-term structural design load is lower than  $\frac{1}{4}$  to  $\frac{1}{5}$  of the short-term failure load.
2. Consult a structural engineer for calculating the admissible load for the specific application.

#### GROUTING

1. **IMPORTANT** Maintain a 100 mm grout head to avoid trapping air. Pour the mixed grout into the prepared formwork ensuring continuous grout flow during the complete grouting operation.
2. Where formwork has been used for grouting base plates and machine bases, place sufficient epoxy

grout in the formwork to rise slightly above the underside (3 mm) of the grouted base.

#### FLOWABLE REPAIR

Immediately after mixing, pour the mixed material into the formwork or repair area. Ensure a continuous flow.

#### ADDITIONAL LAYERS

Apply additional layers in successive pours once each layer has cooled and hardened sufficiently.

Note: The last layer of a multiple pour must be at least 50 mm.

#### CLEANING OF EQUIPMENT

Clean all tools and application equipment with Sika® Colma Cleaner immediately after use. Hardened material can only be removed mechanically.

#### LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika 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 accordance with Sika's recommendations. 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 user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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