

PRODUCT DATA SHEET

Sikadur®-42+ HE Cold Climate

High-performance, wide application thickness, three-part epoxy grout for cold climates

PRODUCT DESCRIPTION

Sikadur®-42+ HE Cold Climate is a three-part, high-performance, moisture-tolerant, deep section 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 150 mm and an application temperature range of +5 °C to +30 °C.

USES

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

Sikadur®-42+ HE Cold Climate 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

Sikadur®-42+ HE Cold Climate is used for precision undergrouting 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

Sikadur®-42+ HE Cold Climate is used for repairing the following concrete elements:

- Spalled concrete structures (not EN 1504-3 compliant)
- Industrial floor slabs
- Hole and void filling
- Runways
- Hardstandings
- Car park decks

Sikadur®-42+ HE Cold Climate is used for interior and exterior applications.

CHARACTERISTICS / ADVANTAGES

- High compressive strength.
- Ready-to-mix, pre-batched units.
- Good flowability.
- Moisture-tolerant.
- 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.
- Wide application thickness range (10 mm to 150 mm).

ENVIRONMENTAL INFORMATION

- Contributes towards satisfying Materials and Resources (MR) Credit: Building Product Disclosure and Optimisation — Environmental Product Declarations under LEED® v4.
- Contributes towards satisfying Materials and Resources (MR) Credit: Building Product Disclosure and Optimisation — Material Ingredients under LEED® v4.
- Environmental Product Declaration (EPD) in accordance with EN 15804. EPD independently verified by Institut für Bauen und Umwelt e.V. (IBU).

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 1504-6:2004 Products and systems for the protection and repair of concrete structures — Anchoring reinforcing steel bar.

PRODUCT INFORMATION

Chemical Base	Epoxy resin and selected fillers and aggregates
Packaging	Pre-batched Unit (Parts A+B+C) <u>20.4 kg</u> Refer to the current price list for available packaging variations.
Colour	Grey
Shelf Life	24 months from date of production
Storage Conditions	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 the packaging. Refer to the current Safety Data Sheet for information on safe handling and storage.
Density	Parts A+B+C Mixed <u>~2300 kg/m³</u>

TECHNICAL INFORMATION

Compressive Strength	Curing Time	+15 °C Curing Temperature	+23 °C Curing Temperature	+5 °C Curing Temperature	(ASTM C579)
	1 day	~73 N/mm ²	~89 N/mm ²	~15 N/mm ²	
	3 days	~82 N/mm ²	~98 N/mm ²	~78 N/mm ²	
	7 days	~101 N/mm ²	~105 N/mm ²	~91 N/mm ²	
	28 days	~105 N/mm ²	~110 N/mm ²	~92 N/mm ²	
Modulus of Elasticity in Compression	~21000 N/mm ²				(EN 196-1)
Effective Bearing Area	>85 %				(ASTM C1339)
Flexural Strength	~30 N/mm ²				(ISO 178)
	~27 N/mm ²				(ASTM C580)
Flexural E-Modulus	~18000 N/mm ²				(ASTM C580)
Tensile Strength	~15 N/mm ²				(EN ISO 527-2)
	~12 N/mm ²				(ASTM C307)
Pull-Out Resistance	>75 kN				(EN 1881)
Shrinkage	-0.018 %				(DIN 52450)
Creep	0.98 % at 4.14 N/mm ² (600 psi) / 31 500 N (+60 °C)				(ASTM C1181)
	0.81 % at 2.76 N/mm ² (400 psi) / 21 000 N (+60 °C)				
Tensile adhesion strength	Slant shear >19 N/mm ² (concrete substrate failure)				(ASTM C882)
	~8.5 N/mm ² (on steel)				(EN 1542)
	~4 N/mm ² (concrete substrate failure)				
Coefficient of Thermal Expansion	-30 °C to 0 °C		2.01 × 10 ⁻⁵ 1/K		(EN 1770)
	0 °C to +30 °C		2.38 × 10 ⁻⁵ 1/K		
	+30 °C to +60 °C		2.05 × 10 ⁻⁵ 1/K		
Service Temperature	Maximum		+60° C		
	Minimum		-40° C		
Heat deflection temperature	Cured for 7 days at +23 °C	+53 °C		(ASTM D648)	
Water Absorption	Coefficient W, cured 7 days	0.018 %		(ASTM C413)	

APPLICATION INFORMATION

Mixing Ratio	Parts 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:			
	Parts 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.			
Consumption	~2.3 kg/m ² per mm. NOTE: Consumption data is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.		
Yield	Each 20.4kg kit will yield ~8.85 litres of mixed material.		
Layer Thickness	Maximum	150 mm	
	Minimum	10 mm	
Peak Exotherm	Tested at + 23 °C	+45 °C	(ASTM D2471)
Product Temperature	Maximum	+30 °C	
	Minimum	+5 °C	
Ambient Air Temperature	Maximum	+30 °C	
	Minimum	+5 °C	
Dew Point	Beware of condensation. Substrate temperature during application must be at least +3 °C above dew point.		
Substrate Temperature	Maximum	+30 °C	
	Minimum	+5 °C	
Substrate Moisture Content	Substrate	Test Method	Moisture Content
	Cementitious substrates	Calcium carbide method (CM method)	≤4 %
Pot Life	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.		
	Temperature	Time	
	+5 °C	~100 minutes	
	+15 °C	~80 minutes	
	+23 °C	~60 minutes	
Flowability	160 mm (23 °C after 5 minutes) Flow channel	(EN 13395-2)	
	270 mm (23 °C) Slump test	(EN 13395-1)	
	6/15 seconds	(ASTM C1339)	

VALUE BASE

based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

All technical data stated in this Product Data Sheet are

FURTHER DOCUMENTS

Refer to Sika® Technical Services for information on specific bolt grouting applications.

ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

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.

IMPORTANT

Damage to the substrate or equipment due to vibration

For optimum results when grouting critical equipment, follow the surface preparation requirements of the latest edition of the American Petroleum Institute Recommended Practice 686 "Machinery Installation and Installation Design", Chapter 5.

CONCRETE

Suitable techniques for substrate preparation include the following:

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

Preconditions

Concrete must be at least 28 days old.

1. Prepare the substrate mechanically using a suitable technique.
2. Remove any debris from pockets or holes for structural fixings.

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

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

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.

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

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 (maximum 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 (maximum 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 ¼ to ⅓ of the short-term failure load.
2. Consult a competent 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 TOOLS

Clean all tools and application equipment with Sika® Thinner C 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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