

PRODUCT DATA SHEET

Sikadur[®]-42 HE

3-part, high performance epoxy grouting system

PRODUCT DESCRIPTION

Sikadur[®]-42 HE is a three-component, high performance, high precision, moisture tolerant, epoxy grouting system. For use at temperatures between +5 °C and +30 °C.

USES

Sikadur[®]-42 HE may only be used by experienced professionals.

Sikadur[®]-42 HE is used for:

High-strength grouting and fixing of:

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

Under-grouting and bedding of:

- Precision seating of base plates
- Machine bases, seat base-plates for light and heavy machinery including heavy impact and vibratory machinery, reciprocating engines, compressors, pumps, presses, etc.
- Bridge bearings
- Mechanical joints (i.e. road/bridge/deck types, etc.)
- Crane tracks

PRODUCT INFORMATION

Chemical Base	Epoxy resin	
Packaging	Pre-batched unit	12 kg (A+B+C)
		pallets of 252 kg (21 × 12 kg)
		24 kg units
		pallets of 960 kg (40 × 24 kg)
Shelf Life	24 months from date of production	

CHARACTERISTICS / ADVANTAGES

- High early strength and fast curing.
- Also applicable at low temperatures.
- Ready-to-mix, pre-batched units.
- Moisture tolerant.
- Non-shrink.
- Corrosion and chemically resistant.
- Stress and impact resistant.
- High compressive strength.
- High vibration resistance.
- Low coefficient of thermal expansion.
- Good creep resistance.

APPROVALS / STANDARDS

Anchoring product for reinforcing steel bar according to EN 1504-6, provided with the CE mark.

Storage Conditions

Stored properly in original, unopened, sealed and undamaged packaging in dry conditions at temperatures between +5 °C and +30 °C. Protect from direct sunlight.

Density ~2140 kg/m³ (A+B+C)

TECHNICAL INFORMATION

Effective Bearing Area > 90 % (ASTM C1339)

Compressive Strength

	Curing temperature		
	+5 °C	+23 °C	+30 °C
1 day	—	~ 87 N/mm ²	~ 90 N/mm ²
3 days	~ 72 N/mm ²	~ 91 N/mm ²	~ 98 N/mm ²
7 days	~ 87 N/mm ²	~ 95 N/mm ²	~ 99 N/mm ²
28 days	~ 90 N/mm ²	~ 100 N/mm ²	~ 105 N/mm ²

(ASTM C579)

Product cured and tested at temperatures indicated.
Test specimen size: 50 mm × 50 mm × 50 mm

Compressive Strength

	Curing temperature		
	+5 °C	+23 °C	+30 °C
6 hours	—	—	~ 43 N/mm ²
12 hours	—	~ 44 N/mm ²	~ 77 N/mm ²
1 day	—	~ 58 N/mm ²	~ 80 N/mm ²
3 days	~ 32 N/mm ²	~ 59 N/mm ²	~ 82 N/mm ²
7 days	~ 72 N/mm ²	~ 77 N/mm ²	~ 85 N/mm ²
28 days	~ 81 N/mm ²	~ 90 N/mm ²	~ 95 N/mm ²

(ASTM D695-96)

Product cured and tested at temperatures indicated.
Test specimen size: 12.7 mm × 12.7 mm × 25.4 mm

Modulus of Elasticity in Compression ~ 18 000 N/mm² (ASTM D695-96)

Flexural Strength ~ 42 N/mm² (ASTM C580)

~ 35 N/mm² (EN 53452)

Flexural E-Modulus ~ 15 000 N/mm² (EN 53452)

Tensile Strength ~ 15 N/mm² (ASTM D638)

~ 15 N/mm² (ISO 527)

~ 12 N/mm² (ASTM C 307)

Tensile Modulus of Elasticity ~ 12 000 N/mm² (ASTM C580)

Elongation at Break ~ 1,4 % (ASTM D638)

0,1 ± 0,05 % (7 days at +23 °C) (ISO 75)

Tensile adhesion strength > 35 N/mm² (concrete failure) (slant shear) (ASTM C882)

~ 11 N/mm² (on steel) (ISO 4624, EN 1542,

> 3,5 N/mm² (concrete failure) EN 12188)

Creep 0,50 % at 4,14 N/mm² (600 psi) / 31 500 N (+60 °C) (ASTM C1181)

0,14 % at 2,76 N/mm² (400 psi) / 21 000 N (+60 °C)

API requirements: ≤ 0,5 % with 2,76 N/mm² load

Shrinkage -0,012 % (ASTM C531)

-0,01 % (EN 52450)

Product Data Sheet

Sikadur®-42 HE

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Coefficient of Thermal Expansion	Coefficient of Thermal Expansion	Temperature Range	(ASTM C531)
	$2,2 \times 10^{-5} 1/K$	-30 °C to +30 °C	
	$3,8 \times 10^{-5} 1/K$	+24 °C to +100 °C	
	Coefficient of Thermal Expansion	Temperature Range	(EN 1770)
	$1,9 \times 10^{-5} 1/K$	+23 °C to +60 °C	
Thermal Compatibility	No delamination / pass		(ASTM C884)
Water Absorption	0,12% (7 days)		(ASTM C413)

APPLICATION INFORMATION

Mixing Ratio	Component A : B : C = 6 : 1 : (28–35) by weight Solid / liquid = (4–5) : 1 by weight		
Layer Thickness	Minimum grout depth: 10 mm Maximum grout depth: 50 mm		
	Temperature	Layer thickness max.	
	5 °C to 15 °C	50 mm	
	15 °C to 30 °C	50 mm*	
	*no reduction of fillers; apply only with Mixing Ratio A : B : C = 6 : 1 : 35		
Peak Exotherm	64 °C (at +23 °C)		(ASTM D 2471)
Product Temperature	Sikadur®-42 HE must be applied at temperatures between +5 °C and +30 °C. Condition the material by storing in this temperature range for 48 hours before use.		
Ambient Air Temperature	+5 °C min. / +30 °C max.		
Dew Point	Substrate temperature during application must be at least 3 °C above dew point to avoid condensation.		
Substrate Temperature	+5 °C min. / +30 °C max.		
Substrate Moisture Content	≤ 4 % pbw		
Pot Life	(200 g, adiabatic testing)		
		+20 °C	+30 °C
	6 : 1 : 35	80 minutes	55 minutes

The pot-life begins when the resin and hardener are mixed. It is shorter at high temperatures and longer at low temperatures. The larger the quantity mixed, the shorter the pot-life. To obtain longer workability at high temperatures, the mixed adhesive may be divided into portions. Another method is to chill components A+B and C before mixing them (only when application temperatures are above +20 °C, and do not chill below +5 °C).

VALUE BASE

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.

LIMITATIONS

- Minimum substrate temperature +5 °C.
- The material must be conditioned by being stored in an area with an ambient temperature between +5 °C and +30 °C for a minimum of 48 hours before using.
- Do not thin with solvents. Solvents will prevent proper curing and change mechanical properties.
- Sikadur®-42 HE is a vapour barrier when cured. Minimum grout depth: 12 mm. Maximum grout depth: 50 mm per lift.
- Component C must be kept dry.
- For specific bolt grouting applications please refer to Sika Technical Services.
- For proper seating, allow the grout to rise above the bottom (3 mm) of the base plate.
- Avoid splitting pre-batched units to mix. Mix complete units only.
- Cold ambient, substrate or material temperatures will influence the curing and flow characteristics of Sikadur®-42 HE.

- Do not subject cured epoxy grout to sudden temperature changes especially during early curing stages.
- Contact Sika Technical Services for control joint spacing on large base plate grouting projects.
- Sikadur® resins are formulated to have low creep under permanent loading. However due to the creep behaviour of all polymer materials under load, the long term structural design load must account for creep. Generally, the long term structural design load must be lower than 20–25 % of the failure load. Please consult a structural engineer for load calculations for your specific application.
- Please refer also to the “Method Statement Sikadur®-42” Ref: 850 42 01.

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 QUALITY

Mortar and concrete must be older than 28 days (dependent on minimum strength requirements). Verify the substrate strength (concrete, natural stone, etc.).

The substrate surface (all types) must be clean, dry and free from contaminants such as dirt, oil, grease, existing surface treatments and coatings, etc.

Steel substrates must be de-rusted to a standard equivalent to Sa 2.5.

The substrate must be sound and all loose particles must be removed.

Substrate must be dry or matt damp and free from any standing water, ice, etc.

SUBSTRATE PREPARATION

Concrete, mortar, stone

Substrates must be sound, dry, clean and free from laitance, ice, standing water, grease, oils, old surface treatments or coatings, and all loose or friable particles must be removed to achieve a laitance and contaminant free, open textured surface.

Steel

Must be cleaned and prepared thoroughly to an acceptable quality standard equivalent to SA 2.5 (i.e. by blast-cleaning and vacuuming). Avoid dew point conditions.

Surface and base plate contact areas must be clean and sound. For best results, the substrate shall be dry. Remove dust, laitance, oils, grease, curing compounds, impregnations, waxes, foreign particles, coatings, and disintegrated materials by mechanical means (i.e. chipping with a chisel, grinding, blast-cleaning, etc). All anchor pockets or sleeves must be free of water. Apply grout immediately to prevent re-oxidising / rust formation.

For optimum results:

When grouting areas or equipment that are sensitive to vibration, it is recommended that the contact surfaces are prepared according to the latest edition of the American Petroleum Institute’s Recommended Practice 686 “Machinery Installation and Installation Design”, Chapter 5.

MIXING

Pre-batched units

Mix components A and B in the component A pail for approx. 30–60 seconds with a paddle attached to a low speed drill (300–450 rpm). Avoid aeration while mixing until the material becomes uniformly blended in colour and viscosity. Place the mixed epoxy into an appropriate mixing vessel. Slowly add the contents of component C (to keep air entrapment at a minimum) dependent on flow requirements (observe the correct mixing ratio) and mix until uniform and homogeneous (approximately 3 minutes).

Mix only that quantity which can be used within its pot-life.

Bulk packing (not pre-batched)

First, stir each component thoroughly. Add the components in the correct proportions into a suitable mixing pail. Mix the components. Use an electric, low speed mixer as above for the pre-batched units.

Never mix components A and B without adding component C (as the exothermic reaction between A and B alone generates excessive heat). Leave Sikadur®-42 HE to stand in the mixing vessel until the majority of entrained air bubbles have dispersed.

APPLICATION METHOD / TOOLS

Forming

The consistency of the Sikadur®-42 HE epoxy grout system requires the use of permanent or temporary forms to contain the material around, as an example, base plates. In order to prevent leakage or seepage, all of these formers must be sealed. Apply polyethylene film or wax to all forms to prevent adhesion of the grout. Prepare the formwork to maintain more than 100 mm liquid head to facilitate placement. A grout box equipped with an inclined trough attached to the form will enhance the grout flow and minimise air encapsulation.

Application

Pour the mixed grout into the prepared forms from one or two sides only, to eliminate air entrapment. Maintain the liquid head to ensure intimate contact to the base plate. Place sufficient epoxy grout in the forms to rise slightly above the underside (3 mm) of the base plate. The minimum void depth beneath the baseplate shall be 12 mm. Where the void beneath the base plate is greater than 50 mm, place the epoxy grout in successive 50 mm lifts or less, once the preceding lift has cooled.

Once hardened, check the adhesion by tapping with a hammer.

Please refer also to the “Method Statement Sikadur®-42” Ref: 850 42 01.

CLEANING OF TOOLS

Sweep excess grout into appropriate containers for disposal before it has hardened.

Dispose of in accordance with applicable local regulations. Uncured material can be removed with Sika® Thinner C. Cured 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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Product Data Sheet

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