BUILDING TRUST

PRODUCT DATA SHEET

Sikadur®-42+ HE Cold Climate

High-performance 3-part epoxy grout for cold climates

DESCRIPTION

Sikadur®-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®-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

CERTIFICATES AND TEST REPORTS

- Anchoring product for reinforcing steel bar according to EN 1504-6:2006, provided with the CE mark.

PRODUCT INFORMATION

Composition	Epoxy resin and selected fillers and aggregates	
Packaging	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
	Please contact our customer service, for information of what packaging sizes are sold in Denmark.	
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 packaging. Refer to the current Safety Data Sheet for information on safe handling and storage.
Appearance and colour	Grey
Density	Part A+B+C mixed — 2 300 kg/m³

TECHNICAL INFORMATION

Effective bearing area	> 85 %		(ASTM C1339)
Compressive strength	**Curing time**	**+5 °C curing temperature**	(ASTM C579)
	1 day	15 N/mm²	
	3 days	78 N/mm²	
	7 days	91 N/mm²	
	28 days	92 N/mm²	
Modulus of elasticity in compression	21 000 N/mm²		(EN 196-1)
Flexural-strength	30 N/mm²		(ISO 178)
	27 N/mm²		(ASTM C580)
Modulus of elasticity in flexure	18 000 N/mm²		(ASTM C580)
Tensile strength	15 N/mm²		(EN ISO 527-2)
	12 N/mm²		
Tensile adhesion strength	Slant shear > 19 N/mm² (concrete failure)		(ASTM C882)
	8.5 N/mm² (on steel)		(EN 1542)
	4 N/mm² (concrete failure)		
Creep	0.98 % at 4.14 N/mm² (600 psi) / 31 500 N (+60 °C)		(ASTM C1181)
	0.81 % at 2.76 N/mm² (400 psi) / 21 000 N (+60 °C)		
Elongation at break	0.1 %		(EN ISO 527-2)
Heat deflection temperature	Cured for 7 days at +23 °C	+53 °C	(ASTM D648)
Shrinkage	0.18 %		(DIN 52450)
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	
Water absorption	Coefficient W, cured 7 days	0.018 %	(ASTM C413)

APPLICATION INFORMATION

Mixing ratio	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.	

Layer thickness	Maximum	100 mm	
	Minimum	10 mm	
Peak exotherm	Tested at + 23 °C	+38 °C	(ASTM D2471)
Flowability	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)
Material 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 %

No rising moisture (ASTM D4263, polyethylene sheet)

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

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.
1. 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

1. Prepare the substrate mechanically using a suitable technique.
2. 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

1. 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.
1. 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
1. 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 excessivley. 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 excessivley. 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 ⅕ 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
1. Immediately after mixing, pour the mixed material into the formwork or repair area. Ensure a continuous flow.

ADDITIONAL LAYERS
1. 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 declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

LEGAL NOTES

Any information or suggestions for use concerning Sika's products, which we either in writing or orally have given buyers or end-users of the product, have been given in good faith based on our own experiences and based on approved praxis and the technological and scientific knowledge on the time of giving such suggestions and information, which are given without any type of guarantees, and which do not lead to any further responsibility from Sika Danmark A/S, besides what is stated in the sales agreement in question. The buyer or end-user should themselves investigate or otherwise make sure, that our products are suitable for the use in question and further make sure that the products are kept and used correct and in agreement with the published rules and considering the actual conditions in order to avoid damages or less satisfactory results. Any order is accepted and any deliverance is affected according to the general terms of sales and delivery from Sika Danmark A/S, which are considered known and accepted, and which could be handed out when asked for. Our catalogues are not up-dated automatically. The present product data sheet is only for use in Denmark. Values stated in the present product data sheet should be seen as recommended, unless stated otherwise.

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