

# PRODUCT DATA SHEET

## Sikadur®-32+

2-part structural epoxy adhesive for bonding, fixing and anchoring with sustainable benefits

### DESCRIPTION

Sikadur®-32+ is a moisture tolerant, structural, 2-part adhesive, based on a combination of epoxy resins and special fillers, designed for use at temperatures between +10 °C and +30 °C.

### USES

Structural adhesive for bonding:

- Concrete elements (including bonding fresh to hardened concrete)
- Hard natural stone
- Ceramics, fibre cement
- Mortar, bricks, masonry, render
- Steel, iron, aluminium
- Wood
- Polyester, epoxy, PU grouts (Icosit KC)
- Polyester / fibreglass and epoxy resin materials

Fixing and anchoring for:

- Small Anchors
- Fasteners
- Railway fasteners

### CHARACTERISTICS / ADVANTAGES

- Application temperature range +10 °C to +30 °C
- Suitable for dry and damp concrete substrates
- Easy to mix and apply

- Very good adhesion to a range of construction materials
- Hardens without shrinkage
- Different coloured parts (for mixing control)
- No primer needed
- High initial and ultimate mechanical strength
- Impermeable to liquids and water vapour
- Good chemical resistance

### SUSTAINABILITY

- Conforms with LEED v4 MR credit: Building product disclosure and optimization — Environmental Product Declarations (option 1)
- Conforms with LEED v4 MR credit: Building product disclosure and optimization — Material ingredients (option 2)
- Environmental Product Declaration (EPD) in accordance with EN 15804. EPD independently verified by Institut für Bauen und Umwelt e.V. (IBU)

### APPROVALS / CERTIFICATES

- CE marking and declaration of performance based on EN 1504-4:2004 Products and systems for the protection and repair of concrete structures — Structural bonding
- 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

<b>Product declaration</b>	EN 1504-4: Structural bonding EN 1504-6: Anchoring	
<b>Composition</b>	Epoxy resin	
<b>Packaging</b>	1.0 kg (A+B) metal tin 8 × 1.0 kg carton boxes	4.5 kg (A+B) plastic pail Pre-batched unit
<b>Shelf life</b>	24 months from date of production	

**Storage conditions**

The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging.

<b>Colour</b>	Part A	Light grey
	Part B	Dark grey
	Parts A+B mixed	Concrete grey
<b>Density</b>	Mixed resin: (1.5 ± 0.1) kg/l Value at +23 °C.	

**TECHNICAL INFORMATION**

<b>Compressive strength</b>	61 N/mm <sup>2</sup>			(EN 12190)	
	<b>Curing time</b>	<b>+10 °C</b>	<b>+23 °C</b>	<b>+30 °C</b>	(ASTM D695)
	1 day	5 N/mm <sup>2</sup>	35 N/mm <sup>2</sup>	-	
	3 days	40 N/mm <sup>2</sup>	42 N/mm <sup>2</sup>	55 N/mm <sup>2</sup>	
	7 days	45 N/mm <sup>2</sup>	48 N/mm <sup>2</sup>	60 N/mm <sup>2</sup>	
	14 days	51 N/mm <sup>2</sup>	52 N/mm <sup>2</sup>	-	
<b>Modulus of elasticity in compression</b>	3300 N/mm <sup>2</sup> (14 days at +23 °C)			(ASTM D695)	
	5000 N/mm <sup>2</sup>			(EN 13412)	
<b>Tensile strength in flexure</b>	<b>Curing time</b>	<b>+10 °C</b>	<b>+23 °C</b>	<b>+30 °C</b>	(EN ISO 178)
	1 day	10 N/mm <sup>2</sup>	18 N/mm <sup>2</sup>	-	
	3 days	35 N/mm <sup>2</sup>	37 N/mm <sup>2</sup>	-	
	7 days	40 N/mm <sup>2</sup>	40 N/mm <sup>2</sup>	35 N/mm <sup>2</sup>	
	14 days	42 N/mm <sup>2</sup>	42 N/mm <sup>2</sup>	-	
<b>Modulus of elasticity in flexure</b>	3700 N/mm <sup>2</sup> (14 days at +23 °C)			(EN ISO 178)	
<b>Tensile strength</b>	<b>Curing time</b>	<b>+10 °C</b>	<b>+23 °C</b>	<b>+30 °C</b>	(EN ISO 527-2)
	1 day	10 N/mm <sup>2</sup>	16 N/mm <sup>2</sup>	-	
	3 days	28 N/mm <sup>2</sup>	30 N/mm <sup>2</sup>	-	
	7 days	34 N/mm <sup>2</sup>	35 N/mm <sup>2</sup>	-	
	14 days	36 N/mm <sup>2</sup>	37 N/mm <sup>2</sup>	-	
<b>Modulus of elasticity in tension</b>	3800 N/mm <sup>2</sup> (14 days at +23 °C)			(EN ISO 527-2)	
<b>Tensile strain at break</b>	(1.4 ± 0.1) % (14 days at +23 °C)			(EN ISO 527-2)	
<b>Shear strength</b>	11 MPa			(EN 12615)	
<b>Tensile adhesion strength</b>	Pull-Out Resistance		≤ 0.60 mm at load of 75 kN		(EN 1881)
	Pull-Out railway applications		No damage at 60 kN		(EN 13146-10)
	Fastening systems		~100 kN		
	Bond/adhesion strength		Pass		(EN 12636)
	<b>Curing time</b>	<b>Substrate</b>	<b>Curing temperature</b>	<b>Adhesion strength</b>	(EN 12188; EN 1542; EN ISO 4624)
	7 days	Concrete dry	+10 °C	> 3 N/mm <sup>2</sup> *	
	7 days	Concrete moist	+10 °C	> 3 N/mm <sup>2</sup> *	
	7 days	Steel	+25 °C	~15 N/mm <sup>2</sup>	
	*100 % concrete failure				
	<b>Creep</b>	Durability/Creep under tensile loads		≤ 0.6 mm at load of 50 kN after 3 months	
<b>Shrinkage</b>	< 0.1 %			(EN 12617-1)	

<b>Coefficient of thermal expansion</b>	(8.7 × 10 <sup>-5</sup> ± 0.1 × 10 <sup>-5</sup> ) 1/K (linear expansion between +23 °C and +60 °C)			(EN 1770)
<b>Electrical resistivity</b>	4.3 GΩ			(EN 50122-2)
<b>Glass transition temperature</b>	64 °C			(EN 12614)
<b>Heat deflection temperature</b>	<b>Curing time</b>	<b>Curing temperature</b>	<b>HDT</b>	(ASTM D648)
	7 days	+23 °C	+47 °C	
<b>Thermal compatibility</b>	<b>Durability</b>	Pass		(EN 13733)
<b>Resistance to moisture</b>	<b>Sensitivity to water</b>	Pass		(EN 12636)
<b>Reaction to fire</b>	Class C-s1,d0 Class B <sub>FL</sub> -s1			(EN 13501-1)

## APPLICATION INFORMATION

<b>Mixing ratio</b>	Part A : Part B = 1 : 2 by weight or volume																												
<b>Consumption</b>	<p>~1.5 kg/m<sup>2</sup> per mm of thickness, if used as a continuous layer.  0.7 kg/m<sup>2</sup>–1.0 kg/m<sup>2</sup> is the quantity normally needed for bonding wet fresh concrete to hardened prepared concrete.  For small anchors or fasteners (consumption in grams per hole):</p> <table border="1"> <thead> <tr> <th>Hole /Re- bar Dia- meter</th> <th>50 mm depth</th> <th>80 mm depth</th> <th>100 mm depth</th> <th>120 mm depth</th> <th>150 mm depth</th> </tr> </thead> <tbody> <tr> <td>10 mm /6 mm</td> <td>3.8 g</td> <td>6.0 g</td> <td>7.5 g</td> <td>9.0 g</td> <td>11.3 g</td> </tr> <tr> <td>12 mm /8 mm</td> <td>4.7 g</td> <td>7.5 g</td> <td>9.4 g</td> <td>11.3 g</td> <td>14.1 g</td> </tr> <tr> <td>14 mm /10 mm</td> <td>5.7 g</td> <td>9.0 g</td> <td>11.3 g</td> <td>13.6 g</td> <td>17.0 g</td> </tr> </tbody> </table>					Hole /Re- bar Dia- meter	50 mm depth	80 mm depth	100 mm depth	120 mm depth	150 mm depth	10 mm /6 mm	3.8 g	6.0 g	7.5 g	9.0 g	11.3 g	12 mm /8 mm	4.7 g	7.5 g	9.4 g	11.3 g	14.1 g	14 mm /10 mm	5.7 g	9.0 g	11.3 g	13.6 g	17.0 g
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	These figures are theoretical and don't take into account for any additional material due to surface porosity, surface profile, variations in level or wastage etc.																												
<b>Layer thickness</b>	~1 mm max.																												
<b>Sag flow</b>	Non-sag up to ~1 mm thickness on vertical surfaces				(EN 1799)																								
<b>Material temperature</b>	Maximum		+30 °C																										
	Minimum		+10 °C																										
<b>Ambient air temperature</b>	Maximum		+30 °C																										
	Minimum		+10 °C																										
<b>Dew point</b>	Beware of condensation. Steel substrate temperature during application must be at least +3 °C above dew point.																												
<b>Substrate temperature</b>	Maximum		+30 °C																										
	Minimum		+10 °C																										
<b>Pot Life</b>	<b>Temperature</b>	<b>Pot Life (200 g)</b>			(ISO 9514)																								
	+10 °C	~120 min																											
	+23 °C	~45 min																											
	+30 °C	~35 min																											

The potlife begins when Parts A+B are mixed. It is shorter at high temperatures and longer at low temperatures. The greater the quantity mixed,

the shorter the potlife. To obtain longer workability at high temperatures, the mixed adhesive may be divided into smaller quantities. Another method is to chill Parts A+B before mixing (not below +5 °C).

Open Time	Temperature	Open Time	(EN 12189)
	+10 °C	~150 min	
	+23 °C	~90 min	
	+30 °C	~60 min	

## 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.

## IMPORTANT CONSIDERATIONS

- Sikadur® resins are formulated to have low creep under permanent loading. However due to the creep behaviour of all polymer materials under load, when using adhesive for structural applications, 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. A structural engineer must be consulted for design calculations for specific structural applications.
- When using multiple units during application, do not mix the following unit until the previous one has been used in order to avoid a reduction in workability and handling time.
- For heavy components positioned vertically or overhead, provide temporary support.

## 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 / MASONRY / MORTAR / STONE

Concrete and mortar must be at least 3–6 weeks old. Substrate surfaces must be sound, clean, dry or matt damp. Free from standing water, ice, dirt, oil, grease, coatings, laitance, efflorescence, old surface treatments, all loose particles and any other surface contaminants that could affect adhesion of the bonding agent.

#### STEEL

Surfaces must be clean, dry, free from oil, grease, coatings, rust, scale, all loose particles and any other surface contaminants that could affect adhesion of the bonding agent.

#### WOOD

Substrate surfaces must be sound, clean, dry and free from dirt, oil, grease, coatings, all loose particles and any other surface contaminants that could affect adhesion of the bonding agent.

#### POLYESTER / EPOXY / CERAMICS / GLASS

Surfaces must be clean, dry, free from oil, grease and any other surface contaminants that could affect adhesion of the bonding agent.

### SUBSTRATE PREPARATION

#### CONCRETE / MASONRY / MORTAR / STONE

Substrates must be prepared mechanically using suitable abrasive blast cleaning, needle gunning, light scabbling, bush hammering, grinding or other suitable equipment to achieve an open textured gripping surface profile.

#### STEEL

Surfaces must be prepared mechanically using suitable abrasive blast cleaning, grinding, rotating wire brush or other suitable equipment to achieve a bright metal finish with a surface profile to satisfy the necessary tensile adhesion strength requirement. Avoid dew point conditions before and during application.

#### WOOD

Surfaces must be prepared by planing, sanding or other suitable equipment.

#### POLYESTER / EPOXY

Surfaces must be prepared by abrading using suitable equipment.

#### CERAMICS / GLASS

Surfaces must be prepared by abrading using suitable equipment. Do not apply to siliconised substrates.

#### ALL SUBSTRATES

All dust and loose material must be completely removed from all substrate surfaces before application of the product by vacuum / dust removal equipment.

### APPLICATION

1. Apply the mixed the Product to the prepared substrate by brush, roller, spray or trowel ensuring uniform and complete coverage.
2. For optimum adhesion, apply adhesive to both substrates that require bonding. On damp prepared concrete substrates, always apply by brush and work the product well into the substrate.
3. For bonding wet fresh concrete to hardened prepared concrete, place the concrete whilst the resin layer is still 'tacky'. If the product becomes glossy and loses 'tackiness', apply another coat and proceed to place concrete.
4. For small anchors or fasteners, clean the hole thoroughly with a special round steel brush and with compressed air (minimum pressure 6 bar), starting from the bottom.
5. Once the hole is completely clean and free of any loose particles or dust, pour the Product in the hole, avoiding entrapping air.
6. Insert the anchor/fastener with a rotary

motion within the adhesive open time. Some of the adhesive must flow out of the hole.

7. During the resin hardening time the anchor must not be moved or loaded.

## 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

Sikadur®-32+  
June 2022, Version 01.01  
020204030010000299

Sikadur-32+-en-GR-(06-2022)-1-1.pdf