

# PRODUCT DATA SHEET

## Sikadur<sup>®</sup>-31<sup>+</sup>

### 2-PART EPOXY STRUCTURAL ADHESIVE



#### DESCRIPTION

Sikadur<sup>®</sup>-31<sup>+</sup> is a 2-part epoxy based moisture tolerant, thixotropic, structural adhesive which bonds most construction materials. It has high mechanical strengths and can also be used for minor concrete repairs, joint filling and crack sealing. Temperature range +10 °C to +30 °C. Internal and external use.

#### USES

Sikadur<sup>®</sup>-31<sup>+</sup> may only be used by experienced professionals.

##### Structural adhesive for bonding:

- Concrete elements
- Hard natural stone
- Ceramics, fibre cement
- Mortar, Bricks, Masonry
- Steel, Iron, Aluminium
- Wood
- Polyester, Epoxy
- Glass

##### Repair and adhesive for:

- Corners and edges
- Holes and void filling
- Metal profiles
- Bonding slip bricks

##### Joint filling and crack sealing:

- Joint and crack arris / edge repair
- Sealing non-structural static cracks

#### CHARACTERISTICS / ADVANTAGES

- Easy to mix and apply
- Very good adhesion to most construction materials
- High mechanical strengths
- Thixotropic: non-sag in vertical and overhead applications
- Hardens without shrinkage
- Different coloured components (for mixing control)
- No primer needed
- High initial and ultimate mechanical strength
- Good abrasion resistance
- Impermeable to most liquids and water vapour
- Good chemical resistance

#### SUSTAINABILITY

- VOC emission classification GEV-EMICODE EC 1<sup>PLUS</sup>

#### APPROVALS / CERTIFICATES

- CE Marking and Declaration of Performance to EN 1504-4 - Structural bonding

#### PRODUCT INFORMATION

<b>Composition</b>	Epoxy resin and selected fillers	
<b>Packaging</b>	Parts A+B: 6 kg	Pre-batched unit
		Pallets of 90 units

Colour	Part A	White
	Part B	Dark grey
	Part A+B mixed	Concrete grey

**Shelf life** 12 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.

**Density** Mixed resin ~2,00 ±0,1 kg/l  
Density value at +23 °C.

**Product Declaration** EN 1504-4:Structural bonding

## TECHNICAL INFORMATION

**Compressive Strength** ~66 N/mm<sup>2</sup> (7 days at +23 °C) (EN 196)  
~65 N/mm<sup>2</sup> (7 days at +23 °C) (ASTM D 695)

**Modulus of Elasticity in Compression** ~8 500 N/mm<sup>2</sup> (7 days at +23 °C) (DIN EN 13412)  
~9 000 N/mm<sup>2</sup> (7 days at +23 °C) (ASTM D 695)

<b>Tensile Strength</b>	<b>Curing Temperature</b>	<b>3 day</b>	<b>7 days</b>	<b>14 days</b>	(ISO 527)	
		+10 °C	-	-		~18 N/mm <sup>2</sup>
		+23 °C	~15 N/mm <sup>2</sup>	~16 N/mm <sup>2</sup>		~18 N/mm <sup>2</sup>

**Modulus of Elasticity in Tension** ~6 500 N/mm<sup>2</sup> (7 days at +23 °C) (ISO 527)

**Elongation at Break** 0,3 ± 0,1 % (7 days at +23 °C) (ISO 527)

<b>Tensile Adhesion Strength</b>	<b>Curing Time</b>	<b>Substrate</b>	<b>Curing Temperature</b>	<b>Adhesion strength</b>	(EN 1542, EN 12188)
	7 days	Concrete mat damp	+23 °C	>4 N/mm <sup>2</sup> *	
	7 days	Steel	+23 °C	~28 N/mm <sup>2</sup>	

\* 100% concrete failure

**Shrinkage** Hardens without shrinkage

**Coefficient of Thermal Expansion** ~5,2 × 10<sup>-5</sup> (±0,2 × 10<sup>-5</sup>) 1/K (EN ISO 1770)  
(linear expansion between +20 °C and +60 °C)

**Glass Transition Temperature** ~47 °C (EN 12614)

**Service Temperature** -40 °C min. / +45 °C max.

## APPLICATION INFORMATION

**Mixing Ratio** Part A : Part B = 2 : 1 by weight or volume

**Consumption** ~2,0 kg/m<sup>2</sup> per mm of thickness.  
Consumption depends on the roughness and absorbency of the substrate. This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level or wastage etc.

**Layer Thickness** 30 mm max.  
For non- structural adhesive or other applications, if layer thickness's of >30 mm are required, apply in successive 30 mm layers or once the previous layer has hardened. The surface of the freshly applied intermediate layers should be scratched to form a key for subsequent layers. If layer application is to be longer than 2 days, the wet applied adhesive must be blinded to excess with quartz sand immediately after application.

<b>Sag Flow</b>	Non-sag up to 15 mm thickness on vertical surfaces	(EN 1799)
<b>Product Temperature</b>	+10 °C min. / +30 °C max.	
<b>Ambient Air Temperature</b>	+10 °C min. / +30 °C max.	
<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>	+10 °C min. / +30 °C max.	
<b>Substrate Moisture Content</b>	Cementitious substrates must be dry or matt damp (no standing water). Brush the adhesive well into the substrate if matt damp.	
<b>Pot Life</b>	70 minutes at +23 °C	
<b>Open Time</b>	90 minutes at +23 °C	
<b>Waiting Time / Overcoating</b>	Sikadur®-31+ may be overcoated with a Sika® compatible epoxy coating when adhesive has hardened	

## 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 adhesive.

#### 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 adhesive.

#### 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 adhesive.

### 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.

#### 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.

### MIXING

### Pre-batched units

Prior to mixing all parts, mix part A (resin) briefly using a mixing spindle attached to a slow speed electric drill (max. 300 rpm). Add part B (hardener) to part A and mix parts A+B continuously for at least 3 minutes until a uniformly coloured smooth consistency mix has been achieved. To ensure thorough mixing pour materials into a clean container and mix again for approximately 1 minute. Over mixing must be avoided to minimise air entrainment. Mix full units only. Mixing time for A+B = 4,0 minutes. Mix only the quantity which can be used within its pot life.

### APPLICATION METHOD / TOOLS

#### Adhesive

Apply mixed adhesive to the prepared surfaces with a spatula, trowel, notched trowel or by gloved hand. For optimum adhesion, it is recommended to apply adhesive to both surfaces that require bonding. For heavy components positioned vertically or overhead, provide temporary support until Sikadur®-31+ has fully hardened /cured. Hardening and curing will be dependent on ambient temperatures.

#### Repair

Apply mixed adhesive to the prepared surfaces with a spatula, trowel or by gloved hand. Use temporary formwork as required.

#### Joint filling and crack sealing

Apply mixed adhesive to the prepared surfaces with a spatula or trowel.

### CLEANING OF EQUIPMENT

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

## 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.

## 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.

## 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.

## ECOLOGY, HEALTH AND SAFETY

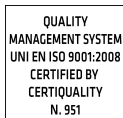
For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

## 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®-31\*  
February 2019, Version 01.01  
020204030010000228

Sikadur-31+-en-IT-(02-2019)-1-1.pdf