BUILDING TRUST

PRODUCT DATA SHEET

Sikadur®-31 SBA S-02

Segmental bridge adhesive for use at +30 °C to +45 °C

DESCRIPTION

Sikadur®-31 SBA S-02 is a 2-part epoxy based moisture tolerant, thixotropic, structural adhesive especially formulated for segmental bridge construction. It has good squeezability, high initial strength gain, hardens without shrinkage and complies with many international and national standards such as FIP, ASTM etc. Application temperature range +30 °C to +45 °C.

USES

Sikadur®-31 SBA S-02 may only be used by experienced professionals.

- Provides a watertight joint between segments
- Lubricates the surfaces
- Transfers the loading stresses between segments

FEATURES

- Meets or exceeds International and National Standards (FIP and ASTM)
- Follows the requirements of ASTM C881 and AASHTO M 235 for Type VI
- Lubricates the surfaces and makes positioning of the shear keys easier
- High strength and high modulus of elasticity
- High initial and ultimate strengths
- Impermeable to liquids and water vapour
- Minimal water absorption
- Suitable for dry and damp concrete surfaces (moisture tolerant)
- Hardening is not affected by humidity
- Thixotropic: non-sag in vertical and overhead applications
- Hardens without shrinkage
- Different coloured components (for mixing control)
- No primer needed

PRODUCT INFORMATION

Composition	Epoxy resin and selected fillers		
Packaging	Parts A+B: 12 kg	Pre-batched unit	
Colour	Part A+B mixed	Concrete grey	(FIP 5.11)
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 +10 °C and +30 °C. Always refer to packaging.		
Density	Mixed resin: 1.90 ± 0.1 kg/l Density value at +25 °C.		

TECHNICAL INFORMATION

Compressive strength (FIP 5.12)

Curing time	Curing temperature	Compressive strength
24 hours	+30 °C	≥ 60 N/mm²
7 days	+30 °C	≥ 75 N/mm²

Curing time	Curing temperature	Compressive yield strength
24 hours	+25 °C	≥ 14 N/mm²
48 hours	+25 °C	≥ 40 N/mm²

(ASTM C881/C881M, ASTM D695)

Modulus of elasticity in compression ≥ 8 000 N/mm² (Instantaneous Modulus) (FIP 5.13)

Shear strength (FIP 5.15)

Temperature	Shear strength (1)
+30 °C	≥ 12 N/mm²

(1) Slant shear cylinder test

Temperature	Bond strength (2)
+25 °C	≥ 7 N/mm²

(ASTM C881/C881M, ASTM C882/C882M)

(2) Hardened to hardened concrete, 2 days moisture cure

Temperature	Contact strength (3)
+45 °C	≥ 7 N/mm²

(ASTM C881/C881M, ASTM C882/C882M)

(3) 14 days cure

Shrinkage Hardens without shrinkage
≤ 0.4 % (after 7 days at +45 °C) (FIP 5.7)

Creep (FIP 5.8)

Deferred modulus in compression (1 hour)	≥ 6000 N/mm²
Deferred modulus in shear (1 hour)	≥ 1200 N/mm²

Curing at upper temperature limit, +45 °C

Tensile adhesion strength (FIP 5.5)

Bond strength on dry concrete	100 % concrete failure
Bond strength on wet concrete	100 % concrete failure

(FIP 5.14)

Tensile bending on dry concrete	100 % concrete failure
Tensile bending on wet concrete	100 % concrete failure

Note: Cured at lower limit of specified temperature, +30 °C. Concrete test prism compressive strength, ~40 N/mm².

Temperature resistance (ASTM D648, FIP 5.10)

Curing Conditions	Heat Resistance
+45 °C	min. +50 °C

Heat deflection temperature (ASTM D648)

Curing conditions	HDT
14 days / +23 °C	min. +50 °C

Modulus of elasticity in shear ≥ 1500 N/mm² (Instantaneous Modulus) (FIP 5.16)

Water absorption (FIP 5.9)

Water absorption	≤ 0.5 %
Solvability	≤ 0.1 %

APPLICATION INFORMATION

Mixing ratio

Part A : Part B = 3 : 1 by weight or volume

Layer thickness

30 mm max.

Sag flow

Non sagging at 3 mm (Thixotropy) (ASTM D2730, FIP 5.3)

Material temperature

+10 °C min. / +30 °C max.

Ambient air temperature

+30 °C min. / +45 °C max.

Dew point

Beware of condensation.
Substrate temperature during application must be at least 3 °C above dew point.

Substrate temperature

+30 °C min. / +45 °C max.

Substrate moisture content

When applied to matt damp concrete brush the adhesive well into substrate.

Pot Life

(FIP 5.1)

Temperature	Pot Life (Quantity: 100 g)
+45 °C	≥ 20 minutes

(ASTM C881/C881M)

Temperature	Gel time (Quantity: 4 L)
+25 °C	≥ 30 minutes

The pot life / gel time starts 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.

Open Time

Quantity: 100 g

(FIP 5.2)

Temperature	Open time
+30 °C	> 60 minutes
+35 °C	~50 minutes
+40 °C	~45 minutes
+45 °C	~40 minutes

Open time can be affected by the fraction of pot life time used before application of the adhesive. It is recommended to apply the product immediately after the mixing.

Curing rate

(FIP 5.6)

Time	Compressive Strength
12 hours	≥ 20 N/mm²
24 hours	≥ 40 N/mm²
7 days	≥ 75 N/mm²

All values at +30 °C

Squeezability

(FIP 5.4)

Squeeze load	Squeeze area
15 kg	≥ 3000 mm²
200 kg	≥ 7500 mm²

Volume: 3140 mm³, at +30 °C

SYSTEM INFORMATION

System structure

A full range of Sikadur®-31 SBA segmental bridge epoxy adhesives covering application temperatures between +10 °C and +60 °C is available:

Application Temperature	Segmental Bridge Adhesive
+40 °C to +60 °C	Sikadur®-31 SBA S-08
+30 °C to +45 °C	Sikadur®-31 SBA S-02
+20 °C to +35 °C	Sikadur®-31 SBA S-03
+10 °C to +25 °C	Sikadur®-31 SBA S-04

BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTATION

- Where applicable, reference must also be made to International and National Standards such as FIP, ASTM, etc.
- General Method Statement: **Sikadur®-31 SBA**

IMPORTANT CONSIDERATIONS

- 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.
- 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.

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

Concrete must be at least 28 days old and have an open textured profile. Any cement laitance shall be removed.
Concrete surfaces must be clean, dry or matt damp. Free from standing water, ice, dirt, oil, grease, laitance, surface treatments, all loose particles and any other surface contaminants that could affect adhesion of the adhesive.

SUBSTRATE PREPARATION

Concrete surfaces must be prepared mechanically using suitable abrasive blast cleaning or other suitable approved equipment to achieve an open textured, laitance free, gripping surface profile. All dust and loose material must be completely removed from surfaces before application of the adhesive.

MIXING

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 and open time.

APPLICATION METHOD / TOOLS

Apply mixed adhesive to the prepared surfaces with a spatula, trowel, notched trowel or by gloved hand at the required thickness.

CLEANING OF EQUIPMENT

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

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

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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