BUILDING TRUST

PRODUCT DATA SHEET

Sikadur®-31 DW Rapid

Fast-curing epoxy structural adhesive approved for contact with drinking water

CE

PRODUCT DESCRIPTION

Sikadur®-31 DW Rapid is a fast-curing, two-part, epoxy, moisture-tolerant structural adhesive. It is used for bonding many construction materials and for minor concrete repairs, joint filling, and crack sealing.

USES

Sikadur®-31 DW Rapid may only be used by experienced professionals.

The Product is used for bonding the following materials:
- Concrete
- Natural stone
- Ceramics
- Fibre cement
- Mortar
- Brick masonry
- Brick slips
- Steel
- Iron
- Wood
- Glass
- Sikadur-Combiflex® SG System for drinking water applications

The Product if used for repairing and reprofiling:
- Corners and edges
- Holes
- Voids
- Metal profiles

The Product is used for filling and sealing:
- Joint arrises
- Crack arrises
- Non-structural static cracks

CHARACTERISTICS / ADVANTAGES

- Approved for contact with drinking water.
- Easy to mix and apply.
- Very good adhesion to many construction materials.
- Thixotropic: non-sag in vertical and overhead applications.
- Hardens without shrinkage.
- Solvent-free.
- Differently coloured components for mixing control.
- No primer required.
- Very good mechanical strength.
- Good resistance to abrasion.

ENVIRONMENTAL INFORMATION

- Contributes towards satisfying Materials and Resources (MR) Credit: Building product disclosure and optimization — Environmental Product Declarations under LEED® v4.
- Contributes towards satisfying Materials and Resources (MR) Credit: Building Product Disclosure and Optimization — Material Ingredients under LEED® v4.
- Environmental Product Declaration (EPD) in accordance with EN 15804. EPD independently verified by Institut für Bauen und Umwelt e.V. (IBU).

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 1504-4: Products and systems for the protection and repair of concrete structures — Structural bonding.
- Water Regulations Sikadur Combiflex SG Jointing System, using Sikadur 31DW Rapid, Approval No. DWI 56.4.1124.
- All raw materials are on European synoptic list for drinking water applications.

PRODUCT INFORMATION

Chemical Base	Epoxy resin and selected fillers	
Packaging	Parts A+B pre-batched unit	6 kg container
Shelf Life	18 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.	
Colour	Part A	White
	Part B	Dark grey
	Part A+B mixed	Concrete grey
Density	Mixed resin at +20 °C	1.95 kg/l

SYSTEM INFORMATION

System Structure	Refer to the Sikadur-Combiflex® SG System Product Data Sheet.

TECHNICAL INFORMATION

Compressive Strength (ASTM D695)

Curing time	+5 °C	+20 °C
1 day	-	28 N/mm²
3 days	23 N/mm²	33 N/mm²
7 days	38 N/mm²	38 N/mm²
14 days	43 N/mm²	43 N/mm²

Modulus of Elasticity in Compression (ASTM D695)

Cured 14 days at +5 °C	5400 N/mm²
Cured 14 days at +20 °C	6400 N/mm²

Flexural Strength (EN ISO 178)

Curing time	+5 °C	+20 °C
1 day	11 N/mm²	11 N/mm²
3 days	23 N/mm²	25 N/mm²
7 days	27 N/mm²	29 N/mm²
14 days	27 N/mm²	32 N/mm²

Tensile Strength (EN ISO 527-2)

Curing time	+5 °C	+20 °C
1 day	8 N/mm²	8 N/mm²
3 days	16 N/mm²	16 N/mm²
7 days	19 N/mm²	20 N/mm²
14 days	21 N/mm²	22 N/mm²

Elongation at Break (EN ISO 527-2)

Cured 14 days at +5 °C	(0.3 ± 0.1) %

Tensile adhesion strength (EN ISO 4624; EN 12188; EN 1542)

Curing Time	Substrate	Curing Temperature	Adhesion strength
7 days	Concrete dry	+5 °C	4.0 N/mm² (100 % concrete failure)*
7 days	Concrete moist	+5 °C	2.8 N/mm² (100 % concrete failure)*
7 days	Steel sand-blasted	+5 °C	13.8 N/mm²

* = No failure of the adhesive; failure entirely within the concrete substrate.

Shrinkage
Hardens without shrinkage

Coefficient of Thermal Expansion (EN 1770)
2.11×10^{-5} 1/K
Linear expansion between +23 °C and +60 °C

Glass transition temperature (EN 12614)

Cured 7 days at +20 °C	+50 °C

Heat deflection temperature (ASTM D695)

Cured 7 days at +20 °C	+49 °C

APPLICATION INFORMATION

Mixing Ratio

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

Consumption
~1,95 kg/m² per mm of thickness.
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 maximum

Sag Flow (EN 1799)
Non-sag up to 10 mm thickness on vertical surfaces

Product Temperature

Maximum	+20 °C
Minimum	+5 °C

Ambient Air Temperature

Maximum	+20 °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	+20 °C
Minimum	+5 °C

Substrate Moisture Content
Substrate must be dry or matt damp (no standing water).
Brush the adhesive well into the substrate.

Pot Life (ISO 9514)

Temperature	Pot Life 200 g	Open Times
+5 °C	~90 minutes	-
+20 °C	~40 minutes	~50 minutes

The potlife begins when the resin and hardener 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 portions. Another method is to chill components A+B before mixing them (although not 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

Damage due to insufficient long-term structural design load
Sikadur® resins are formulated to have low creep under permanent loading. However, due to the creep behavior 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 20 to 25 % of the failure load.
2. Consult a suitably qualified, competent structural engineer for calculating the load for the specific application.

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, MASONRY, MORTAR, STONE
Concrete and mortar 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.
WOOD
Surfaces must be sound, clean, dry and free of contaminants such as dirt, oil, grease, coatings and loose friable material.

SUBSTRATE PREPARATION

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, MASONRY, MORTAR OR STONE
Suitable techniques for substrate preparation include the following:
- Abrasive blast cleaning
- Needle gunning
- Light scabbling
- Bush hammering
- Grinding

Prepare the substrate mechanically using a suitable technique so the substrate has an open-textured, gripping surface profile.
STEEL
Suitable techniques for substrate preparation include the following:
- Abrasive blast cleaning
- Rotating wire brush
- Grinding

Prepare the substrate mechanically using a suitable technique, so the substrate has a bright metal finish with a surface profile to satisfy the necessary tensile adhesion strength requirement.
WOOD
1. Prepare the substrate by planing, sanding or using other suitable equipment.

MIXING

When using multiple units during application, do not mix the following unit until the previous unit has been used.
PRE-BATCHED UNITS
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 (maximum 300 rpm).
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. Do not overmix. To ensure thorough mixing, pour materials into a clean container and mix again for approximately 1 minute. Mixing time for A+B = ~4 minutes.

APPLICATION METHOD / TOOLS

- For any application in public water distribution system consult the Instructions For Use (IFU) document availabe from Sika® Technical Services.
- When using a thin layer adhesive, apply the mixed adhesive to the prepared surface with a spatula, trowel, or notched trowel (or with hands protected by gloves).
- When applying as a repair paste, use appropriate formwork.
- When using for bonding metal profiles onto vertical surfaces, support and press uniformly using props for at least 12 hours, depending on the thickness applied (not more than 5 mm) and the ambient temperature.
- Once hardened, check the adhesion by lightly tapping with a hammer.

APPLICATION

Full adhesion is not achieved before the Product has fully hardened. Hardening depends on ambient temperatures. Unsupported heavy components might fall down when not supported.
Provide temporary support for heavy components until the Product has fully hardened.
BONDING
Preconditions
Prior to application, confirm dew point conditions before and during application.
On damp prepared concrete substrates, always apply

the Product by brush and work the Product well into the substrate. Apply the mixed adhesive to the prepared surfaces with a spatula, trowel, notched trowel or by gloved hand.
For optimum adhesion, apply the adhesive to both surfaces that require bonding.
For heavy components positioned vertically or overhead, provide temporary support until the Product has fully hardened.
REPAIR
Preconditions
Prior to application, confirm dew point conditions before and during application.
On damp prepared concrete substrates, always apply by brush and work the Product well into the substrate.
Apply the mixed adhesive to the prepared surfaces with a spatula, trowel or by gloved hand.
JOINT FILLING AND CRACK SEALING
Apply the mixed adhesive to the prepared surfaces with a spatula or trowel.

CLEANING OF TOOLS

Clean all tools and application equipment with Sika® Thinner C immediately after use. Hardened 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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