BUILDING TRUST

PRODUCT DATA SHEET

Sikadur®-41+

3-component thixotropic epoxy concrete repair and structural strengthening mortar

PRODUCT DESCRIPTION

Sikadur®-41+ is a thixotropic, 3-part patching and repair mortar, based on a combination of epoxy resins and special fillers, designed for use at temperatures between +10 °C and +30 °C.

USES

Sikadur®-41+ may only be used by experienced professionals.

The product is used for:
- Structural concrete repair (Principle 3, Method 3.1 of EN 1504-9). Repair of spalling and damaged concrete in buildings, bridges, infrastructure and superstructure works.
- Structural strengthening (Principle 4, Method 4.4 of EN 1504-9). Increasing the bearing capacity of the concrete structure by adding mortar.

The product is used as a repair mortar on the following substrates:
- Concrete.
- Natural stone.
- Ceramics.
- Fibre cement.
- Mortar.
- Brick masonry.
- Steel.
- Iron.
- Wood.

The product if used for repairing and reprofiling:
- Filling cavities and voids.
- Vertical and overhead application.
- Reprofiling corners and edges.

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

CHARACTERISTICS / ADVANTAGES

- Easy to mix and apply.
- Very low VOC (GEV Emicode EC1PLUS).
- Very good adhesion to many construction materials.
- Suitable for structural concrete repair, class R4 according to EN 1504-3:2005 (structural and non-structural repair).
- Hardens without shrinkage.
- Different coloured components for mixing control.
- Thixotropic: non-sag in vertical and overhead applications.
- High initial and final mechanical strength.
- Good resistance to abrasion.
- Good resistance to chemicals.
- Application up to 60 mm thickness in one layer.

ENVIRONMENTAL INFORMATION

- Contributes towards satisfying Indoor Environmental Quality (EQ) Credit: Low-Emitting Materials under LEED® v4.
- 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).
- VOC emission classification GEV Emicode EC1plus.

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 1504-3: Products and systems for the protection and repair of concrete structures — Structural and non-structural repair.

PRODUCT INFORMATION

Product Declaration	EN 1504-3	R4
Chemical Base	Epoxy resin, selected fillers and quartz sand.	
Packaging	Parts A+B+C	11 kg pre-batched unit
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.	
Colour	Part A	White
	Part B	Dark grey
	Part C	Sand
	Part A+B+C mixed	Concrete grey
Density	Mixed resin at +21 °C	(2.00 ± 0.10) kg/l

TECHNICAL INFORMATION

Compressive Strength

Class R4 (EN 1504-3)

100 MPa (EN 12190)

Curing time	+10 °C	+23 °C	+30 °C
1 day	30 N/mm²	68 N/mm²	70 N/mm²
3 days	75 N/mm²	88 N/mm²	88 N/mm²
7 days	85 N/mm²	100 N/mm²	-

(EN 196-1)

Flexural Strength (EN ISO 178)

Curing time	+10 °C	+23 °C	+30 °C
1 day	17 N/mm²	28 N/mm²	30 N/mm²
3 days	24 N/mm²	30 N/mm²	37 N/mm²
7 days	35 N/mm²	36 N/mm²	-

Tensile Strength (EN ISO 527-2)

Curing time	+10 °C	+23 °C	+30 °C
1 day	3 N/mm²	10 N/mm²	16 N/mm²
3 days	12 N/mm²	16 N/mm²	18 N/mm²
7 days	14 N/mm²	20 N/mm²	-

Tensile Modulus of Elasticity

Cured 14 days at +23 °C	16 000 N/mm²	(EN ISO 527-2)

Elongation at Break

Cured 7 days at +23 °C	(0.2 ± 0.1) %	(EN ISO 527-2)

Tensile adhesion strength (EN 12188; EN 1542)

Curing Time	Substrate	Curing Temperature	Adhesion strength
7 days	Concrete dry	+20 °C	> 4 MPa (100 % concrete failure)
7 days	Concrete mat damp	+20 °C	> 2.5 MPa (100 % concrete failure)

Shrinkage

Restrained shrinkage / expansion	3.2 MPa	

Glass transition temperature

+60 °C (EN 12614)

Reaction to Fire	Class C-s2, d0 Class B_{fl}-s1	(EN 13501-1)

APPLICATION INFORMATION

Mixing Ratio	Part A : Part B : Part C by weight	2 : 1 : 2.5
Consumption	2.00 kg/m² per mm of thickness. Note: Consumption data is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level, wastage or any other variations. Apply product to a test area to calculate the exact consumption for the specific substrate conditions and proposed application equipment.	
Layer Thickness	Maximum	60 mm
Sag Flow	Non-sag up to 20 mm thickness on vertical surfaces	(EN 1799)
Product Temperature	Maximum Minimum	+30 °C +10 °C
Ambient Air Temperature	Maximum Minimum	+30 °C +10 °C
Dew Point	Beware of condensation. Substrate temperature during application must be at least +3 °C above dew point.	
Substrate Temperature	Maximum Minimum	+30 °C +10 °C
Substrate Moisture Content	Substrates must be dry or matt damp (no standing water).	

Pot Life (ISO 9514)

Temperature	Pot Life	Open Time
+10 °C	150 minutes	-
+20 °C	70 minutes	-
+30 °C	50 minutes	90 minutes

The pot life begins 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. To obtain longer workability at high temperatures the mixed adhesive may be divided into portions. Alternatively 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

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. Generally the long term structural design load must be lower than 20–25 % of the failure load. A Structural Engineer must be consulted for load calculations 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 AND STONE

Concrete and mortar must be at least 28 days old. Substrates must be sound, clean, dry or matt damp with no standing water. Substrates must also be free from contamination 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 all contaminants such as dirt, oil, grease, coatings and loose friable material.

WOOD

Surfaces must be sound, clean, dry and free of all contaminants such as dirt, oil, grease, coatings and loose friable material.

SUBSTRATE PREPARATION

Reduced adhesion performance
Surface contamination such as dust and loose material, including that caused during substrate preparation, can reduce the product's performance.
Thoroughly clean all substrate surfaces before application of the product by vacuum or dust removal equipment.

CONCRETE, MASONRY, MORTAR AND 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.
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.
The substrate has a bright metal finish with a surface profile to satisfy the necessary tensile adhesion strength requirement.

WOOD

Prepare the substrate by planing, sanding or using other suitable equipment.

MIXING

Maintaining workability and handling time.
When using multiple units during application, do not mix the following unit until the previous one 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.
- While mixing Parts A + B, gradually add Part C (aggregate).
- IMPORTANT: Do not mix excessively. Mix until a uniform consistency is achieved.
- To ensure thorough mixing pour materials into a clean container and mix again for approximately 1 minute.

APPLICATION

REPAIR

Preconditions:
Prior to application, confirm dew point conditions before and during application.
- On damp prepared concrete substrates, always work the Product well into the substrate.
- For vertical or overhead applications use Sikadur®-31+ as a primer to improve the bond.
- Place temporary formwork as required.
- Apply mixed material to the prepared surfaces with a spatula, trowel or by gloved hand.

For repairs greater than 60 mm deep, the Product must be applied in layers.
- Scratch the surface of the freshly applied intermediate layer to form a key for the subsequent layer.
- Apply successive layers once the previous layer has hardened.
- If the time between layers is going to be more than 2 days, blind the wet mortar to excess with quartz sand immediately after application.

JOINT FILLING AND CRACK SEALING

- Apply mixed material 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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