BUILDING TRUST

PRODUCT DATA SHEET

Sikadur®-53

Epoxy crack injection and grouting resin for all conditions, including wet and underwater

PRODUCT DESCRIPTION

Sikadur®-53 is a two-part, epoxy, moisture resistant crack injection and grouting resin.

USES

Sikadur®-53 may only be used by experienced professionals.

- Crack injection resin to seal damp and wet cracks by high pressure injection.
- Fills and seals voids and cracks in structures such as bridges, civil engineering structures, industrial and residential buildings (e.g. columns, beams, foundations, walls, floors, water retaining structures, etc.).
- Structural bonding.
- Preventing ingress of water and infiltration of reinforcement corrosion promoting substances.
- As a grouting resin or adhesive for bonding concrete and steel underwater (by water displacement).

CHARACTERISTICS / ADVANTAGES

- Suitable for dry, damp, wet and underwater conditions.
- Application temperature range +5 °C to +30 °C.
- Shrinkage-free hardening.
- Seals against moisture and oxygen.
- Good adhesion to concrete, masonry, stone and steel substrates.
- Good adhesion to salt water immersed, cementitious substrates.
- High density ensures good water displacement.
- Good mechanical underwater strengths.
- Minimum crack widths 0.5 mm.
- Injectable with single component pumps.

APPROVALS / STANDARDS

- CE Marking and Declaration of Performance to EN 1504-4 - Structural bonding.
- CE Marking and Declaration of Performance to EN 1504-5 - Concrete Injection.
- CE Marking and Declaration of Performance to EN 1504-6 - Anchoring of reinforcing steel bar.

PRODUCT INFORMATION

Chemical Base	Epoxy resin and selected fillers	
Packaging	Parts (A+B): 20 kg pre-batched unit:	
	Part A	17.77 kg container
	Part B	2.23 kg container
	Parts (A+B): 6 kg pre-batched unit:	
	Part A	5.33 kg container
	Part B	0.67 kg container
Shelf Life	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.	

Density

		(ISO 2811)
Part A	~2,35 kg/l	
Part B	~1,02 kg/l	
Part A+B mixed	~2,04 kg/l	

Note: at +20 °C.

Viscosity

Temperature	Part A+B mixed	(ISO 3219)
+10°C	~15 200 mPa·s	
+20°C	~5 800 mPa·s	

TECHNICAL INFORMATION

Compressive Strength

Time	+5 °C	+20 °C	(EN 12190)
1 day	—	~33 N/mm²	
3 days	~39 N/mm²	~61 N/mm²	
14 days	~70 N/mm²	~90 N/mm²	

Product cured and tested at temperatures indicated, grouted and cured underwater.

Modulus of Elasticity in Compression

~6300 N/mm² (EN 13412)

Flexural Strength

Time	+5 °C	+20 °C	(EN 53452)
1 day	—	~25 N/mm²	
2 days	~28 N/mm²	~38 N/mm²	
14 days	~38 N/mm²	~40 N/mm²	

Product cured and tested at temperatures indicated, grouted and cured underwater.

Flexural E-Modulus

~3300 N/mm² (EN 53452)

Tensile Strength

~20 N/mm² (14 days at +20 °C)
Product cured and tested at temperatures indicated, grouted and cured underwater.

Tensile Modulus of Elasticity

~4100 N/mm² (ISO 527)

Elongation at Break

~0,6% (ISO 527)

Tensile adhesion strength

~2,5 – 3,5 N/mm² (concrete failure) (ISO 4624, EN 1542)

Shrinkage

Hardens without shrinkage.

Coefficient of Thermal Expansion

~7,5 × 10^{-5} 1/K (EN 1770)

(linear expansion between -20 °C and +60 °C)

Electrical Resistivity

~4.12 GΩ (PN-92/E-05203)

(surface resistance within the range of 0.8 to 8.8 GΩ which corresponds with EN 50122-2)

APPLICATION INFORMATION

Mixing Ratio

Part A : Part B = 8 : 1 parts (by weight)
Part A : Part B = 3.6 : 1 parts (by volume)

Layer Thickness

30 mm maximum

Ambient Air Temperature

+5 °C minimum / +30 °C maximum

Substrate Temperature

+5 °C minimum / +30 °C maximum

Pot Life

Quantity: 18 kg

Temperature	Pot-life
+8° C	~60 minutes
+20 °C	~30 minutes
+30° C	~15 minutes
+40° C	~7.5 minutes

The pot-life 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 pot-life. 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 (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

- Do not add solvent to the product.
- At higher temperatures, pot-life will be shortened.
- At lower temperatures, pot-life will be increased, but product will become more difficult to inject and take longer to harden.
- Trials must be carried out to establish suitability of resin, spacing of injection ports, injection equipment and pressures.
- 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.
- Take cores at locations of cracks to clarify penetration of resin.

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

ADHESIVE AND GROUTING

Concrete / Masonry / Mortar / Stone

Concrete and mortar must be at least 28 days old.
Verify the substrate strength to ensure design strengths are achieved.
Substrate surfaces can be dry, damp, wet or underwater, but must be stable, clean, free from ice, dirt, oil, grease, coatings, laitance, efflorescence, old surface treatments, all loose particles and any other surface contaminants that could affect adhesion.

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.

CRACK INJECTION

Cracks must be clean and either dry, damp, wet or underwater.

SUBSTRATE PREPARATION

ADHESIVE AND GROUTING

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.

CRACK INJECTION

After inserting or bonding injection ports, cap the crack with a capping sealer, allow to cure then purge cracks with resin until the resin runs clean and contaminant free.

MIXING

Prior to mixing all parts, mix Part A (resin) briefly using a mixing spindle attached to a slow speed electric mixer (maximum 400 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. Overmixing 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.
For use on damp, wet and underwater applications, after final mixing, wait 15 minutes (at +20 °C) to allow the mixture to pre-react for optimal adhesion.

APPLICATION METHOD / TOOLS

Strictly follow installation procedures as defined in Method Statements, application manuals and working instructions, which must always be adjusted to the actual site conditions.

Adhesive
Apply the mixed material to the prepared surface with a spatula, trowel, notched trowel, or with hands protected by gloves.

Grouting Resin
Position steel components away from the bonding substrate, using props where necessary to support steel vertical or overhead. Seal the edges to leave one edge open to pour the grouting resin. When applied underwater, use funnel / feed hopper systems connected with flexible tubes to provide enough hydrostatic height / pressure. Then pour the material underwater through the funnel / feed hopper system.

Crack Injection
Preliminary trials must be carried out by a competent applicator experienced in crack injection, using injection equipment and appropriate injection pressures.

CLEANING OF TOOLS

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

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.

SIKA LIMITED
Watchmead
Welwyn Garden City
Hertfordshire, AL7 1BQ
Tel: 01707 394444
Web: www.sika.co.uk
Twitter: @SikaLimited