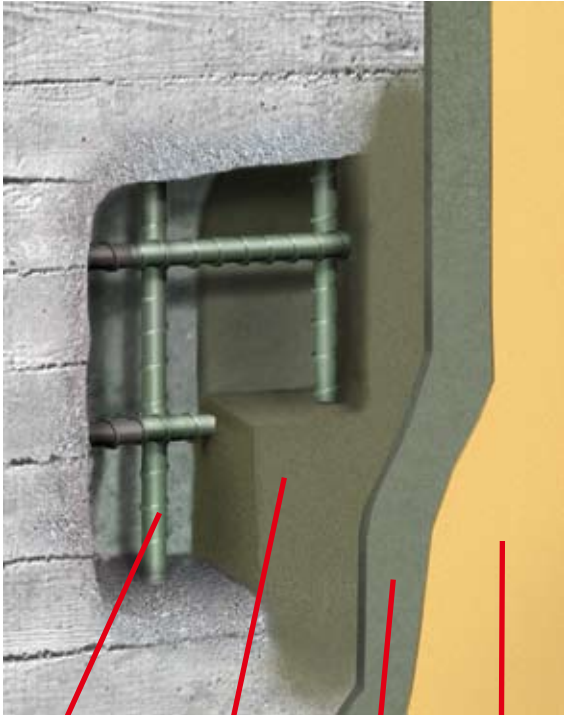




SITE HANDBOOK

Repair of Concrete Structures - Patch Repair and Spray Applications

A simple step by step guide to preparing and applying Sika Concrete Repair Systems



SikaTop® Armattec®-
reinforcement
corrosion protection

Sika Top® -
repair and profiling
mortar

Sika Top®
pore sealer
and smoothing
mortar

Sikagard®-
protective
coating layer

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Health and Safety



Work Safely!

Useful Documents



Method Statement

- Sika® Top Systems
- Detailed step by step guide to concrete repair



Product Data Sheet

- Product uses
- Substrate quality
- Substrate preparation
- Mixing Ratio
- Application conditions & tools
- Pot life
- Curing treatment



Material Safety Data Sheet

- Hazards
- First Aid
- Emergency
- Ecology

Bag Layout

Example: Sika® Top-122

Storage Details

Safety Label

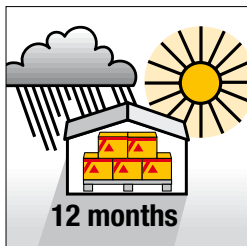
Main Description

Application Information



Product Characteristics

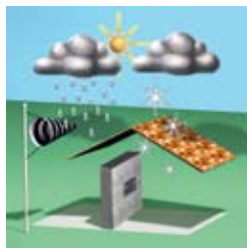
Climate Conditions



Storage

Product storage:

- Dry, cool conditions
- Undamaged original packaging



Application

Protect area from:

- Direct sunlight
- Wind
- Rain
- Frost



Temperature

Check acceptable limits:

- Ambient temperature
- Substrate temperature

Equipment

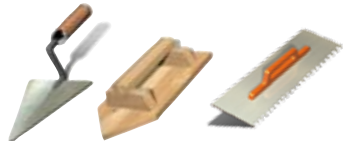
Hand tools



- Mixing tools



- Mixing bowl



- Application tools



- Sponge



- Brushes



Do and Do Not!

DO



Use only clean potable water



Make sure tools are clean and well maintained



Remove only concrete as instructed by supervising officer or qualified engineer



Consult product data sheet before starting

DO NOT



Do not contaminate mixture with other chemicals



Do not mix powders from different products



Do not add more water than recommended



Do not mix and apply the product in direct sunlight

1. Substrate Preparation



Surface Preparation

- Mark defective concrete



Concrete Removal

- Using high pressure water jet, 1100 bar (large area)



or

- With hammer drill (medium area)

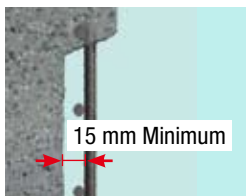


or

- Hammer and chisel (small patch repairs)

- ▼ Remove tire wires, nails etc.
 - Remove only defective concrete as instructed.
- Do not reduce structural integrity.

2. Substrate Preparation



Extent of Concrete Removal

- Remove concrete minimum 15 mm behind main bars



Correct Substrate Preparation

- Roughen surface (2 mm minimum)
- Cut sides minimum 90° to avoid undercutting and maximum 135° to reduce debonding around edges
- Substrate shall be sound with no loose material



Inform supervisor immediately if there are any cracks in the substrate

3. Preparing Reinforcement



Cleaning Reinforcement

Remove all:

- Tie wires
- Mortar / Concrete
- Rust
- Other loose material



Removal Techniques

- Use steel wire brush

or

- Abrasive blast cleaning techniques



or

- High pressure water jetting
(1100 bar minimum)



- ▼ Inform supervisor immediately of any badly damaged reinforcement

4. Reinforcement Corrosion Protection



Application of Corrosion Protection (if specified)

- Apply two 1 mm thick layers (total 2 mm minimum)



Allow time for the 1st coat to harden before applying 2nd coat.
Allow application to dry before applying repair mortar.



Application Techniques

- Hopper spray for large applications

or

- Brush for small applications
- Inspect bars after to ensure full coverage



Use two brushes simultaneously to ensure full application behind bars

5. Bonding Primer



Apply bonding primer (if specified)

- Wet the substrate



- Wipe away excess water



small area: with sponge



large area: with air pressure



Application Technique

- For small patches brush firmly onto surface



- For large areas spray on with hopper gun



Point gun at different angles on the surface to ensure even application behind the bars

6a Repair Application by hand



Surface Preparation (if bonding primer not applied)

- Wet the substrate



- Wipe away excess water



small area: with sponge



large area: with air pressure



Application Technique

- Press firmly the repair mortar into the repair area using a trowel



Apply 2nd layer when 1st layer is dry if application depth exceeds product's max. layer thickness

- Profile surface and finish with trowel



Finish surface with wooden or PVC trowel for best results.
Do not spray additional water over the surface!



6b Wet Spray Application



Surface Preparation

- Wet the substrate



- Wipe away excess water



small area: with sponge



large area: with air pressure



Application Technique

- Point nozzle 200 mm to 500 mm from surface



- Finish with PVC or wooden trowel



Make sure voids are filled behind bars.

Point spray nozzle at different angles to the surface.

If 2nd layer is required surface shall not be too smooth.

7. Smoothing Mortar



Surface Preparation

- Wet and clean surface with water (180 bar)



Smoothing or Levelling Mortar

- Apply vertically using toothed trowel
- Apply with trowel approx. 45° to surface



Use different size toothed trowel for required layer thickness



- When the 1st layer is hard, apply 2nd layer



- Smooth surface using wooden trowel after product has set



0,25 - 4 hrs.

8. After Application



Curing Protection

Protect application from:

- Frost
- Wind
- Rain
- Sun



Curing Methods

- Plastic sheeting
- Jute and water
- Other membranes



- If no subsequent coating is to be applied on surface an approved curing agent could be used

Additional Information



Cleaning Tools

- Clean with water

Hardened material can only be removed mechanically



Environment

- Dispose of waste responsibly
- Separate recycling materials



Accidents

- Seek immediate medical attention in the event of an injury

Mixing



One component System (e.g. Sika® MonoTop®)

- Add powder to water and mix for 3 minutes



Two component System (e.g. Sika Top®)

- Shake component A thoroughly and pour into clean container
- Add in powder component C and mix for 3 minutes

! Do not add extra water.



Three component System (e.g. Sika® EpoCem®)

- Shake component A + B separately
- Mix components A + B together



- Add (A + B) to powder component C and mix for 3 minutes



Adjust consistency to suit conditions using powder-component C.
Refer to Product Data Sheet for more information.

Sika Repair Systems

Product	Type	Application	Description
Sika® Top 121	Repair Mortar	Hand	Trowel applied
			Notched trowel
Sika® Top 122	Repair Mortar	Hand	2-part polymer modified
			Normal setting
Sika® Rep	Repair Mortar	Hand	2-part polymer modified
			Normal setting
Sika® Rep Fine	Repair Mortar	Hand	1-part polymer modified
			micro-fibers, Normal setting
Sika® Top Armatic 108	Repair Mortar	Hand	1-part polymer modified
			Styrene coating, Normal setting
Sika® Top Armatic 110	Reinforcement Corrosion Protection	Hand	2-part Cement based synthetic modified
			Anti-Corrosive coating
Sika® gard 720 EpoGem	Bonding & Reinforcement Corrosion Protection	Hand	1 part Cement based Epoxy modified
			Bonding Agent & Anti corrosion coating
Sika® Crack Seal	Pore Sealer micro mortar Repair Mortar crack filler	Hand	1 part Cement based Epoxy modified
			levelling & finishing mortar
		Hand	1-part 100% acrylic elastomeric Putty knife

Hints and Advice - Overhead Application



- Apply mortar tightly behind reinforcement until bars are covered.



- Press firmly to ensure pores in concrete substrate are filled.



- From same end apply second layer in same direction as first.
- Repeat layers until void is filled



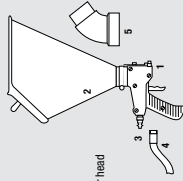
- Smooth surface using wooden trowel

Hints and Advice - Wet Spray Equipment

Hopper Gun



- Hopper content: 6 ltr
- Weight (empty): 1.5 kg
- Air requirement: 220 l/min
- Required air pressure: 2 to 3 bar
- Adjustable aperture



- 1 Gun with adjustable aperture
- 2 Hopper
- 3 Quick disconnect
- 4 Hose \varnothing 13 mm, 10 m long
- 5 45° Adaptor for application over head (Independent air compressor is needed)

Mortar Pump for "Wet" Spray Application, e.g. Putzmeister S5 EVTM with Mixer TM 100



- Process: Wet spray application
- Conveying volume: 0.4 – 2.4 m³/h
- Conveying distance: horizontal up to 70 m
- Pump pressure: max. 25 bar
- Dimensions: L x W x H (mm): 2290 x 680 x 1150
- Motor: 400 V / 50 Hz
- Capacity of the vessel: 100 ltr
- Weight: 400 kg (inkl. Mixer)



- 1 Nozzle for mortar \varnothing 1 to 8 mm
- 2 Nozzle for finishing coat \varnothing 0.5 to 1.0 mm

The information contained herein and any other advice 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. The information only applies to the application(s) and product(s) expressly referred to herein and is based on laboratory tests which do not replace practical tests. In case of changes in the parameters of the application, such as changes in substrates etc., or in case of a different application, consult Sika's Technical Service prior to using Sika products. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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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