CONCRETE REPAIR SITE HANDBOOK

Hand Placed and Spray application

Sika® MonoTop® - pore sealer/smoothing mortars

Sika® MonoTop® - repair and profiling mortars

Sika® MonoTop®/SikaTop® Armatec® - reinforcement corrosion protection

Sikagard® - protective coatings
## CONTENTS

### BEFORE APPLICATION
- 4 Health and Safety
- 5 Useful Documents
- 6 Bag Layout
- 7 Climate Conditions
- 8 Equipment
- 9 Do's and Don'ts

### CONCRETE REPAIR PROCEDURE
- 10-11 1 Substrate Preparation
- 12 2 Reinforcement Preparation
- 13 3 Reinforcement Corrosion Protection
- 14 4 Bonding Primer
- 15 5 Repair Application by Hand
- 16 6 Repair Application by Spray
- 17 7 Smoothing Mortar

### AFTER APPLICATION
- 18 Curing Protection
- 18 Curing Methods
- 19 Cleaning Tools
- 19 Environment/Accidents

### MIXING
- 20

### SIKA REPAIR SYSTEMS
- 21

### HINTS AND ADVICE
- 22 Over Head Application
- 23 Spray Equipment
WORK SAFELY!
USEFUL DOCUMENTS

METHOD STATEMENT
- Sika® MonoTop® Systems
- Detailed step-by-step guide to concrete repair

PRODUCT DATA SHEET
- Product uses
- Substrate quality
- Substrate preparation
- Mixing ratio
- Application conditions and tools
- Pot life
- Curing treatment

SAFETY DATA SHEET
- Hazards
- First aid
- Emergency
- Ecology
BAG LAYOUT

Example
CLIMATE CONDITIONS

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 container

Application tools

Sponge

Brushes
DO’S AND DON’TS

**DO’S**

- 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

**DON’TS**

- 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 a high pressure water jet, 1100 bar (large area)
- or
- With a hammer drill (medium area)
- or
- Hammer and chisel (small patch repairs)

Remove tie wires, nails etc.
Remove only defective concrete as instructed.
Do not reduce structural integrity.
EXTENT OF CONCRETE REMOVAL
- Remove concrete minimum 15mm behind main bars

CORRECT SUBSTRATE PREPARATION
- Rougher surface (2mm 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 a supervisor immediately if there are any cracks in the substrate.
2. REINFORCEMENT PREPARATION

CLEANING REINFORCEMENT
Remove **ALL:**
- Tie wires
- Mortar/concrete
- Rust/scale
- Other loose material

REMOVAL TECHNIQUES
1. Steel wire brush or hand/power tools
   Technique applicable only in carbonated concrete and under environmental constraints where techniques 2 and 3 cannot be used.
   - Reinforcement uniformly cleaned

2. Abrasive blast cleaning techniques
   - Reinforcement uniformly cleaned
   - If chlorides are present, reinforcement should be cleaned with water afterwards

3. High pressure water jetting (**1100 bar min**)
   - Reinforcement uniformly cleaned

Inform a supervisor immediately of any badly damaged reinforcement.
3. REINFORCEMENT CORROSION PROTECTION

APPLICATION OF CORROSION PROTECTION
- Apply two 1mm thick layers (total 2mm minimum)

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.
4. BONDING PRIMER

APPLYING 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.
5. 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 the repair mortar firmly into the repair area using a trowel and/or hand

Apply second layer when first layer is dry if application depth exceeds product’s maximum layer thickness.

- Profile the surface and finish with a trowel

Finish the surface with a wooden or PVC trowel for best results. Do not spray additional water over the surface!
6. REPAIR APPLICATION
By Spray

SURFACE PREPARATION
- Wet the substrate

- Wipe away excess water
  - small area: with sponge
  - large area: with air pressure

APPLICATION TECHNIQUE
- Point nozzle 200mm to 500mm 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 should not be too smooth.
7. SMOOTHING MORTAR

SURFACE PREPARATION
- Wet and clean the surface with water (180 bar)

SMOOTHING OR LEVELLING MORTAR
- Apply vertically using toothed trowel
- Apply with trowel approximate 45° to surface

Use different size toothed trowel for required layer thickness.

- When the first layer is hard, apply second layer

- Smooth surface using wooden trowel after product has set

0.25 - 4 hours
AFTER APPLICATION

CURING PROTECTION
Protect application from:
- Frost
- Wind*
- Rain*
- Sun*

* Apply as soon as possible after application to avoid surface cracking/crazing

CURING METHODS
- Plastic sheeting
- Fabric and water
- Other membranes

- If no subsequent coating is to be applied on the 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
(eg Sika® MonoTop®)
- Add powder to water and mix for three minutes

TWO COMPONENT SYSTEM
(eg SikaTop®)
- Shake component A thoroughly and pour into a clean container
- Add in powder component C and mix for three minutes
  
  Do not add extra water.

THREE COMPONENT SYSTEM
(eg Sika® EpoCem®)
- Shake component A + B separately
- Mix components A + B together

- Add A + B to powder component C and mix for three minutes

Adjust consistency to suit conditions using powder component C. Refer to product data sheet for more information.
## SIKA REPAIR SYSTEMS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Type</th>
<th>Application</th>
<th>BS EN 1504 Reference</th>
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<tbody>
<tr>
<td>Sika® MonoTop®-612</td>
<td>Repair Mortar</td>
<td>Hand</td>
<td>Wet spray</td>
</tr>
<tr>
<td>Sika® MonoTop®-615</td>
<td>Repair Mortar</td>
<td>Hand</td>
<td>Wet spray</td>
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<tr>
<td>Sika® Rapid Repair Mortar</td>
<td>Repair Mortar</td>
<td>Hand</td>
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<td>SikaCem®-133 Gunite S</td>
<td>Repair Mortar</td>
<td>Dry spray</td>
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<td>SikaCem®-133 F Gunite</td>
<td>Repair Mortar with fibres</td>
<td>Dry spray</td>
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<td>SikaCem®-133 CP Gunite</td>
<td>Repair Mortar low resistivity</td>
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<td>CP Overlay</td>
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<td>Repair Mortar</td>
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<td>Bonding Primer and Reinforcement Corrosion Protection</td>
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<td>Spray</td>
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<td>Bonding Primer and Reinforcement Corrosion Protection (chlorides)</td>
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<td>Spray</td>
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<td>Smoothing Mortar/Pore Sealer</td>
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<tr>
<td>Sikagard®-720 EpoCem®</td>
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<td>Hand</td>
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</tbody>
</table>
HINTS AND ADVICE
Over Head 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

Spray Equipment

WET SPRAY PROCESS

Compressed air

Wet mix

Hydraulic conveyance (dense stream)

Air stream conveyance (thin stream)

Variable

Air for concrete pump

DRY SPRAY PROCESS

Compressed air

Dry mix

Air stream conveyance (thin stream)

Water feed

Variable
SIKA FULL RANGE SOLUTIONS
FOR CONSTRUCTION:

WATERPROOFING  CONCRETE  REFURBISHMENT  MERCHANT
SEALING AND BONDING  FLOORING  ROOFING  INDUSTRY

FOR MORE INFORMATION:

WHO WE ARE
Sika Limited and Sika Ireland Limited are part of the global Sika Group, specialising in the manufacture and supply of chemical based products. Sika have a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protecting in the building sector and the motor vehicle industry. Sika has subsidiaries in 97 countries around the world and manufactures in over 190 factories. With over 17,000 employees Sika generates annual sales of CHF 5.75 billion (£4.69bn). We are also committed to providing quality, service, safety and environmental care.

In the UK and Ireland, we provide market-leading solutions for concrete, waterproofing, roofing, flooring, refurbishment, sealing & bonding, and industry, and have manufacturing sites in Welwyn Garden City, Preston, Leeds and Dublin with more than 700 employees and a turnover of more than