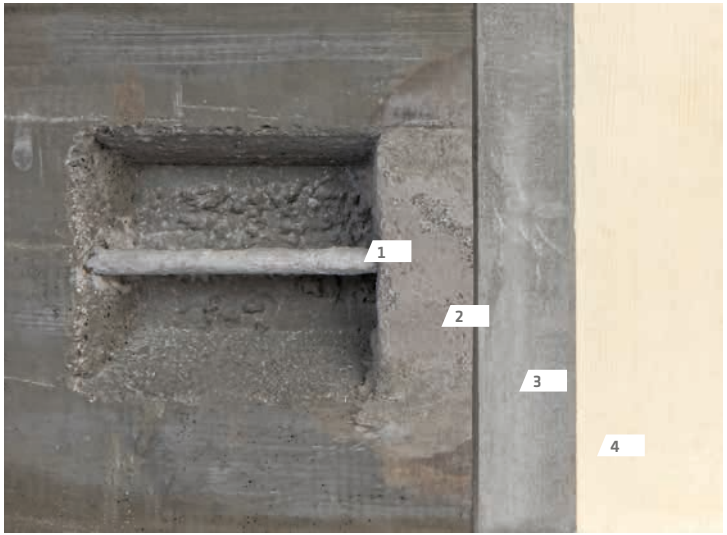
ENGINEERED REFURBISHMENT CONCRETE REPAIR SITE HANDBOOK

HAND PLACED AND SPRAYED APPLICATIONS

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

BUILDING TRUST

CONCRETE REPAIR SITE HANDBOOK



1. **Sika MonoTop® / SikaTop® Armatec®**
   Reinforcement corrosion protection and bonding primers
2. **Sika MonoTop®, SikaTop®**
   Repair and profiling mortars
3. **Sika MonoTop®, SikaTop®**
   Pore sealer/smoothing mortars
4. **Sikagard®**
   Protective coatings and hydrophobic impregnations

CONTENT

HEALTH AND SAFETY

WORK SAFELY!

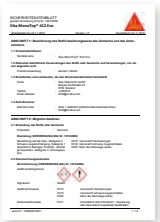
TECHNICAL AND SAFETY INFORMATION

METHOD STATEMENT

- Repairing Concrete Using Sika® Ready to use Mortars
- 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
- Limitations



SAFETY DATA SHEET

- Hazards
- First aid
- Emergency
- Ecology

CONSULT PRODUCT DATA SHEET AND SAFETY DATA SHEET BEFORE STARTING WORK.

BAG LAYOUT

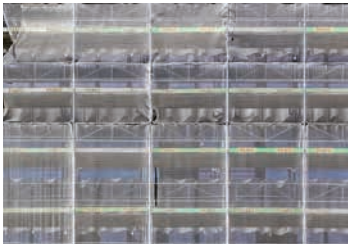
EXAMPLE

1. **PRODUCT NAME**
2. **MAIN DESCRIPTION AND PRODUCT CHARACTERISTICS**
3. **BAG SIZE**
4. **PRODUCT APPLICATION**
5. **PRODUCT CERTIFICATION**
6. **STORAGE DETAILS**
7. **POT LIFE**
8. **CE MARKING**

CLIMATE CONDITIONS

STORAGE
- Dry and cool conditions
- Undamaged original packaging

APPLICATION
Protect area from:
- Direct sunlight
- Wind
- Rain
- Frost



TEMPERATURE
Check acceptable limits:
- Ambient temperature
- Substrate temperature

DO NOT MIX AND APPLY THE PRODUCT IN DIRECT SUNLIGHT.

EQUIPMENT

HAND TOOLS

Mixing tools

Mixing container

Trowels

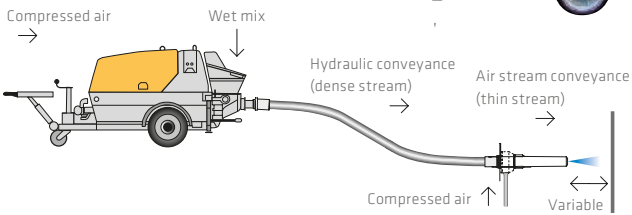
Sponge

Brushes

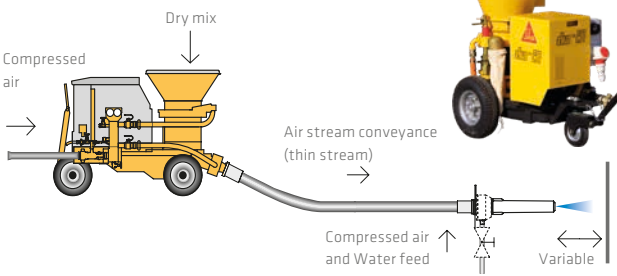
MAKE SURE TOOLS AND EQUIPMENTS ARE CLEAN AND WELL MAINTAINED.

SPRAY EQUIPMENT

WET SPRAY PROCESS



DRY SPRAY PROCESS



1 SUBSTRATE PREPARATION

SURFACE PREPARATION
- Mark defective concrete

CONCRETE REMOVAL
- Using a high pressure water jet, 1,100 bar (large area)

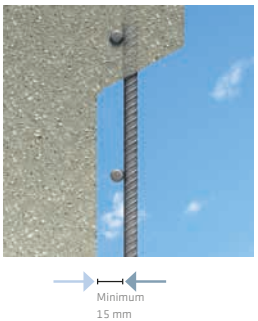
or
- With a hammer drill (medium area)

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 15 mm behind main bars



CORRECT SUBSTRATE PREPARATION
- Rough surface (2 mm minimum)
- Cut sides more than 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 1 mm thick coats (total 2 mm minimum)

FIRST COAT MUST BE HARDENED BEFORE IT IS READY FOR THE SECOND COAT. PRIOR TO APPLYING THE REPAIR MORTAR, THE CORROSION PROTECTION MUST BE DRY.

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 TECHNIQUES
- 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.

5a REPAIR APPLICATION BY HAND

SURFACE PREPARATION
(if no bonding primer applied)
- Wet the substrate

- Wipe away excess water

Small area:
with sponge

Large area:
with air pressure

APPLICATION TECHNIQUES
- Press the repair mortar firmly into the repair area using a trowel and/or hand

APPLY SECOND COAT, WHEN FIRST COAT IS DRY (IF APPLICATION DEPTH EXCEEDS PRODUCT'S MAXIMUM COAT THICKNESS).

- Profile the surface and finish with a trowel

FOR BEST RESULTS, FINISH THE SURFACE WITH A PVC OR WOODEN TROWEL.

DO NOT SPRAY ADDITIONAL WATER OVER THE SURFACE.

5b REPAIR APPLICATION BY SPRAY

SURFACE PREPARATION

- Wet the substrate (if no bonding primer applied)

- 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 a PVC or wooden trowel

MAKE SURE VOIDS ARE FILLED BEHIND BARS. POINT SPRAY NOZZLE AT DIFFERENT ANGLES TO THE SURFACE.

IF SECOND COAT IS REQUIRED, SURFACE SHOULD NOT BE TOO SMOOTH.

6 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 COAT THICKNESS.

- When the first coat is hard, apply second coat

- After product has set, smooth surface using a wooden trowel

0.25 – 4 hours

AFTER APPLICATION

CURING PROTECTION

Protect application from:

- Frost
- Rain*
- Wind*
- 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 (e.g. Sika® Antisol®) could be used.

ADDITIONAL INFORMATION

Mixing

ONE-COMPONENT SYSTEM
(e.g. Sika MonoTop®)

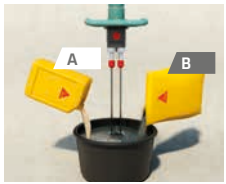
- Add powder to water and mix at least for 3 minutes with a low speed mixer

DO NOT MIX POWDERS FROM DIFFERENT PRODUCTS. DO NOT ADD MORE WATER THAN RECOMMENDED.

TWO-COMPONENT SYSTEM (e.g. SikaTop®)

- Shake component A thoroughly and pour into a clean container
- Add in powder component B and mix at least for 3 minutes

DO NOT ADD EXTRA WATER.



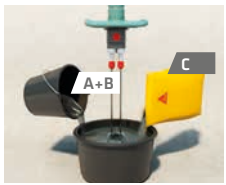
THREE-COMPONENT SYSTEM
(e.g. SikaTop® Armatec EpoCem®)

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

DO NOT CONTAMINATE MIXTURE WITH OTHER CHEMICALS.

- Add A + B to powder component C and mix for at least 3 minutes with a low speed mixer

ADJUST CONSISTENCY TO SUIT CONDITIONS USING POWDER COMPONENT C. REFER TO PRODUCT DATA SHEET FOR MORE INFORMATION.



ADDITIONAL INFORMATION

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 coat in same direction as first
- Repeat coats until void is filled

- Smooth surface using a wooden trowel

HINTS AND ADVICE

Cleaning tools / environment / accidents

CLEANING TOOLS

- Clean immediately with water after use.

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

SIKA CONCRETE REPAIR SYSTEMS

Product	Type	Application methods		Uses
Sika MonoTop®-412 N	Structural Repair Mortar for cold climate	Hand	Wet sprayed	Repair of structural elements that require high performances (beams, columns, etc.)
Sika MonoTop®-412 S	Structural Repair Mortar for warm climate	Hand	Wet sprayed	Repair of structural elements that require high performances (beams, columns, etc.)
Sika MonoTop®-412 Eco	Structural Repair Mortar with reduced carbon footprint	Hand	Wet sprayed	Sustainable repair of structural elements that require high performances (beams, columns, etc.)
Sika MonoTop®-412 NFG	Structural Repair Mortar with corrosion inhibitors for cold climate	Hand	Wet sprayed	Repair of structural elements that require high performances in specially harsh environments
Sika MonoTop®-412 SFG	Structural Repair Mortar with corrosion inhibitors for warm climate	Hand	Wet sprayed	Repair of structural elements that require high performances in specially harsh environments
Sika MonoTop®-352 N	Structural Lightweigth Repair Mortar for cold climate	Hand	Wet sprayed	Repair of structural elements where low weight is required
Sika MonoTop®-352 S	Structural Lightweigth Repair Mortar for warm climate	Hand	Wet sprayed	Repair of structural elements where low weight is required
Sika MonoTop®-352 NFG	Structural Lightweigth Repair Mortar with corrosion inhibitors for cold climate	Hand	Wet sprayed	Repair of structural elements where low weight is required in harsh environments
Sika MonoTop®-352 SFG	Structural Lightweigth Repair Mortar with corrosion inhibitors for warm climate	Hand	Wet sprayed	Repair of structural elements where low weight is required in harsh environments
Sika MonoTop®-612	Structural Repair Mortar	Hand	Wet sprayed	Pre-batch mortar for repair of structural elements (beams, columns, etc.) – no water needed
SikaTop®-122	2-component Structural Repair Mortar	Hand	–	Pre-batch mortar for repair of structural elements (beams, columns, etc.) – no water needed
Sika MonoTop®-620	Smoothing/Levelling Mortar	Hand	Wet sprayed	Fine repair mortar for smooth finishing (e.g. before coating with a paint)
Sika MonoTop®-723 N	Smoothing/Levelling Mortar for cold climate	Hand	Wet sprayed	Fine repair mortar for smooth finishing (e.g. before coating with a paint)
SikaTop®-121	2-component Smoothing/Levelling Mortar	Hand	–	Pre-batch mortar for repair of structural elements (beams, columns, etc.) – no water needed
Sika MonoTop®-910 N	Bonding primer and reinforcement protection for cold climate	Hand	Wet sprayed with a hopper gun	Primer for the improvement of adhesion and protection of the repair mortar over rebars or existing concrete
Sika MonoTop®-910 S	Bonding primer and reinforcement protection for warm climate	Hand	Wet sprayed with a hopper gun	Primer for the improvement of adhesion and protection of the repair mortar over rebars or existing concrete
SikaTop® Armatec-110 Epocem	Bonding primer and reinforcement protection for demanding applications	Hand	After mixing 3 components → Wet sprayed with a hopper gun	High performances primer for the improvement of adhesion and protection of the repair mortar over rebars or existing concrete

FOR MORE INFORMATION ON CONCRETE REPAIR

WE ARE SIKA

Sika is a specialty chemicals company with a globally leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protection in the building sector and industrial manufacturing. Sika has subsidiaries around the world and produces innovative technologies for customers worldwide. In doing so, it plays a crucial role in enabling the transformation of the construction and transportation sector toward greater environmental compatibility.

Any product name or reference reflects the Sika product name at the time of creation of this document and may differ from the product name or reference during past events.

Our most current General Sales Conditions shall apply.
Please consult the most current local Product Data Sheet prior to any use.

SIKA SERVICES AG
Tueffenwies 16
CH-8048 Zurich
Switzerland

Contact
Engineered Refurbishment
Phone +41 58 436 40 40
www.sika.com

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