



# REFURBISHMENT CONCRETE REPAIR SITE HANDBOOK

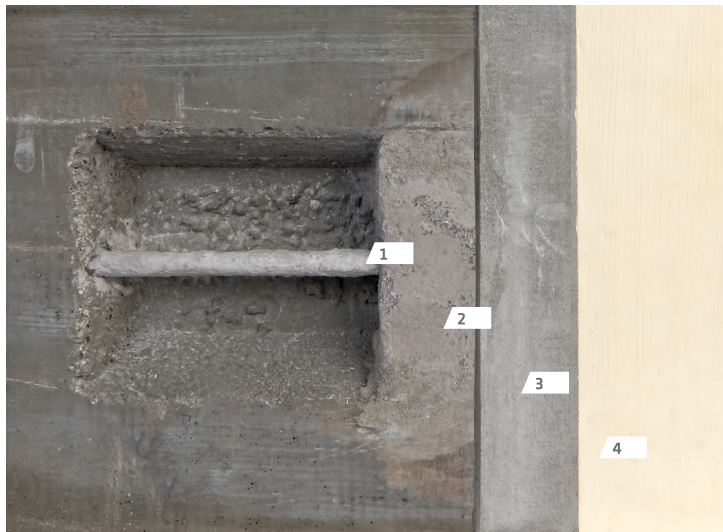
HAND PLACED AND SPRAYED APPLICATIONS

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

BUILDING TRUST



# CONCRETE REPAIR SITE HANDBOOK



**Sika MonoTop®/  
SikaTop® Armatec®**

Reinforcement corrosion protection and bonding primers

**Sika MonoTop®, SikaTop®**

Repair and profiling mortars

**Sika MonoTop®, SikaTop®**

Pore sealer/smoothing mortars

**Sikagard®**

Protective coatings and hydrophobic impregnations

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# HEALTH AND SAFETY

WORK SAFELY!



# TECHNICAL AND SAFETY INFORMATION



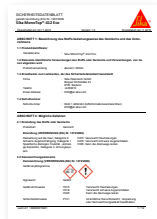
## METHOD STATEMENT

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



PRODUCT NAME

MAIN DESCRIPTION AND PRODUCT CHARACTERISTICS

BAG SIZE

# CLIMATE CONDITIONS

## STORAGE

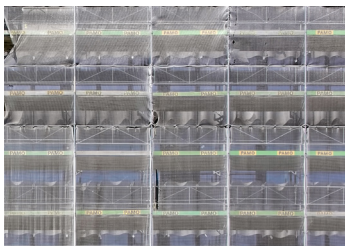
Dry and cool conditions  
Undamaged original packaging



## 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

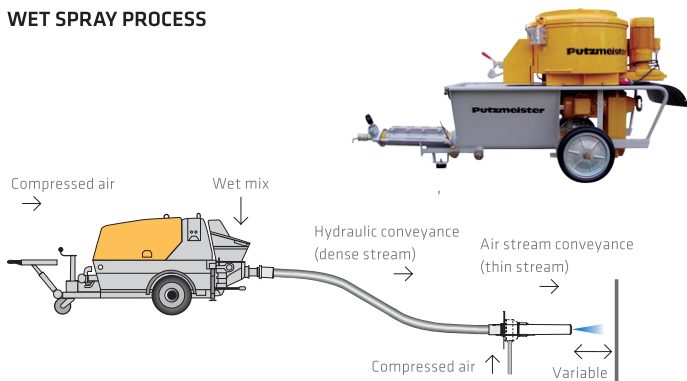


MAKE SURE TOOLS AND EQUIPMENTS ARE CLEAN AND WELL MAINTAINED.

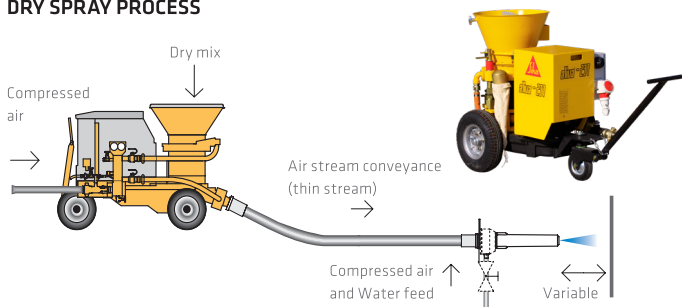


## SPRAY EQUIPMENT

### 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)

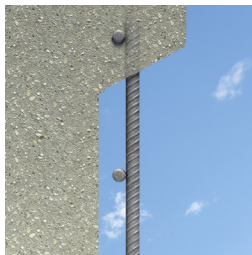
REMOVE TIE WIRES, NAILS ETC.  
REMOVE ONLY DEFECTIVE CONCRETE  
AS INSTRUCTED.

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  $90^\circ$  to avoid undercutting and maximum  $135^\circ$  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

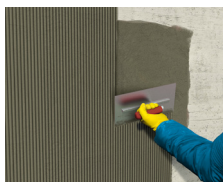
Wet and clean the surface with water  
(180 bar)



## 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.

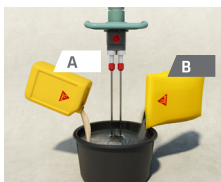


### TWO-COMPONENT SYSTEM (e.g. SikaTop®)

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.



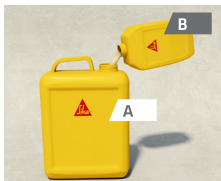
### THREE-COMPONENT SYSTEM

(e.g. SikaTop® Armatex EpoCem®)

Shake component A + B separately

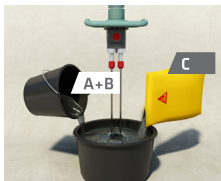
Mix components A + B together

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	
<b>Sika MonoTop®-352 NFG</b>	Light Weight Structural Repair Mortar	Hand	Wet sprayed
<b>Sika MonoTop®-412 NFG</b>	Structural Repair Mortar	Hand	Wet sprayed
<b>Sika MonoTop®-612N</b>	Structural Repair Mortar	Hand	Wet sprayed
<b>Sika MonoTop®-436N</b>	Structural Repair Mortar	Form Pour	
<b>SikaQuick®-2500 (au)</b>	Rapid Hardening Mortar	Hand	
<b>SikaGunite®-GP</b>	Structural Repair Mortar	Dry Spray	
<b>Sika MonoTop®-FC</b>	Fairing Coat	Hand	Wet sprayed
<b>Sika MonoTop®-723N</b>	Smoothing Mortar	Hand	Wet sprayed
<b>SikaGard®-720 Epocem®</b>	Damp Substrate Pore Sealer	Hand	Wet sprayed
<b>Sika MonoTop®-910N</b>	Bonding primer and reinforcement corrosion protection	Hand	Wet sprayed
<b>SikaTop®-110 Epocem®</b>	Bonding primer and reinforcement corrosion protection	Hand	Wet sprayed
<b>Sikadur® 32</b>	Bonding primer	Hand	Wet sprayed

	DESCRIPTION
	R3 Normal setting, 4-75mm
	R4 Normal setting, 6-50mm
	R4 Normal setting, 5-100mm
	R4 Normal setting, 30-300mm
	Very rapid hardening, gain early strength, 5-150mm
	General purpose gunite dry spray, 20-150mm
	Up to 3mm
	R3 mortar, 1-5mm
	R4 Epoxy cement
	Normal use
	Demanding use
	Long open life

# FOR MORE CONCRETE REPAIR INFORMATION

## WHO WE ARE

Sika is a specialty chemicals company with 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's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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

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