Concrete Cosmetics

Process manual for Emcefix and Nafuquick fillers

EXPERTISE
CONCRETE COSMETICS

MC
BE SURE. BUILD SURE.

Introduction

Emcefix & Nafuquick: Cosmetics for concrete surfaces.
Using special fillers for "cosmetic" correction of concrete surfaces is so common in working with precast elements and on every construction site that experts are commonly referred to as "concrete cosmeticians".

As the market leader in high quality concrete fillers, MC has not only set the quality standards but also introduced the term "Concrete Cosmetics" and sustainably coined the progress of construction with its unique range of products.

Even high quality fair faced concrete surfaces with excellent concrete quality may need cosmetic correction, if the material shows, for example, colour variations due to the natural resources used.

Over the years, every concrete cosmetician has developed his own work techniques. Various tools are being used, and various cosmetic constructions are selected.

With this comprehensive manual for professional and appropriate cosmetics work, MC collected the best tips and tricks as a handy manual for using Concrete Cosmetics in daily business.

This standard reference shows practitioners and planners the various possibilities of using Concrete Cosmetics.

The highest requirements in the cosmetic fillers of MC call for a wide range of products which excels through its variety of colours, its usability and its high quality.

For the exact directions on how to use the fillers, please see the technical data sheets for MC cosmetic fillers. Additionally, please see the safety data sheets.

Should you have any further questions about our products and systems, or about topics concerning their use, feel free to give us a call.

MC fillers for Concrete Cosmetics

The MC cosmetic fillers turn a defective concrete surface into high class fair faced concrete.
Defective concrete surfaces showing chunks, honey combs, pores, colour variations or soiling can easily, quickly and smoothly be changed into impressive fair faced concrete surfaces.

MC's unique range of cosmetic fillers consists of two product groups with different application characteristics and colours. All MC cosmetic fillers excel through their great application properties:

- optimal adhesion on concrete substrate,
- elegant and smooth application,
- frost and light resistant,
- through mixing of high class polymer additives, all fillers can also be used in extreme weathers.

The entire colour range of all fine fillers can be mixed, so basically every shade of grey can be obtained. By adding special additives, special colours can be created, too.

Emcefix coarse fillers

* All cosmetic fillers can be used all year round.
Higher temperatures accelerate the curing behaviour of the freshly mixed fillers, while lower temperatures slow it down.

		Purpose	Max. layer thickness/ consumption	Processing time	Colour
Emcefix-Haftbrücke	Bonding agent	• powerful bonding agent • bonding agent for coarse fillers on mineral substrates	**Consumption:** approx. 1.1 kg/m²/mm	approx. 60 min/20 °C	grey
Emcefix-Spachtel G lang	Coarse filler slow	• application from +5 to +30 °C * • small scale works • coarse repairs step to 25 mm • broken edges, honey combs, etc.	**One layer:** from 6 to 25 mm **Two layers:** up to 50 mm **Consumption:** approx. 1.8 kg/m²/mm	approx. 20 min/20 °C	grey
Emcefix-Spachtel G rapid	Coarse filler fast	• application from +5 to +30 °C * • small scale works • coarse repairs step to 25 mm • broken edges, honey combs, etc.	**One layer:** from 6 to 25 mm **Two layers:** up to 50 mm **Consumption:** approx. 1.8 kg/m²/mm	approx. 7 min/20 °C	grey
Emcefix-Spachtel G extra	Coarse filler fibre reinforced	• application from +5 to +30 °C * • large scale works • coarse repairs step to 25 mm • levelling areas	**One layer:** from 6 to 25 mm **Two layers:** up to 50 mm **Consumption:** approx. 1.6 kg/m²/mm	approx. 30 min/20 °C	grey
Emcefix-Spachtel G ultra	Coarse filler fibre reinforced with integrated bonding agent	• application from +5 to +30 °C * • large scale works • coarse repairs up to 40 mm • levelling areas	**One layer:** from 6 to 40 mm **Two layers:** up to 80 mm **Consumption:** approx. 1.52 kg/m²/mm	approx. 30 min/20 °C	cement grey

Emcefix fine fillers

		Purpose	Max. layer thickness/ consumption	Processing time	Colour
Emcefix-Spachtel F lang	Fine filler slow	• application from +5 to +30 °C • surface fillings (pores,cavities, etc.) • fine surface finish for high quality fair faced concrete areas	**One layer:** 1-6 mm **Consumption:** approx. 1.45 kg/m²/mm	approx. 30 min/20 °C	white white grey stone grey grey concrete grey medium grey anthracite
Emcefix-Spachtel F rapid	Fine filler fast	• application from +5 to +30 °C • surface fillings (pores,cavities, etc.) • fine surface finish for high quality fair faced concrete areas	**One layer:** 1-6 mm **Consumption:** approx. 1.45 kg/m²/mm	approx. 10 min/20 °C	grey concrete grey medium grey
Emcefix-Spachtel F extra fein	Super fine filler	• application from +5 to +30 °C • surface fillings (pores, cavities, etc.) • super fine surface finish for fair faced concrete areas	**One layer:** 0,5-3 mm **Consumption:** approx. 1.5 kg/m²/mm	approx. 30 min/20 °C	light grey concrete grey medium grey

Nafuquick universal fillers

		Purpose	Max. layer thickness/ consumption	Processing time	Colour
Nafuquick Uni	Medium-fine filler	• max. grain size 0.7 mm • surface fillings • closing rigid pre-cast element joints • closing deeper pores/cavities • levelling form work edges	**One layer:** 3-20 mm **Consumption:** approx. 1.4 kg/m²/mm	approx. 30 min/20 °C	cement grey concrete grey medium grey Colours mixable!
Nafuquick	Fine filler	• max. grain size 0.35 mm • surface fillings • surface finish for high class concrete surfaces • closing pores and cavities	**One layer:** 1-6 mm **Consumption:** approx. 1.4 kg/m²/mm	approx. 30 min/20 °C	light grey grey concrete grey medium grey Colours mixable!
Nafuquick HT	Fine filler	• max. grain size 0.35 mm • for substrate temperatures of + 70 °C • for small and large scale fine fillings	**One layer:** 1-15 mm **Consumption:** approx. 1.25 kg/m²/mm	approx. 30 min/20 °C	concrete grey
Nafuquick HT fine	Super fine filler	• max. grain size 0.25 mm • for substrate temperatures of + 70 °C • for small and large scale fine fillings	**One layer:** 1-10 mm **Consumption:** approx. 1.25 kg/m²/mm	approx. 30 min/20 °C	concrete grey

Standard processes

The standard processes described in the following must be carried out for each cosmetic concrete correction with our mineral cosmetic fillers without any exception; thus, they will not be mentioned in detail again in the following chapters.

Substrate preparation

The substrate must be frost free, clean, solid, and free of anti-adhesive substances. Cement paste must be removed.

The substrate must be pre wetted so that it is matt damp yet still absorbent.

Mixing

The Concrete Cosmetics fillers are poured into measured, clean water and stirred with a slow moving agitator, e. g. Collomix X06HF with DLX agitator.

The filler is stirred until it has reached an homogeneous, lump free, semi plastic texture.

Application

A coarse cosmetic filler is to be applied with a trowel and finishing trowel in exess. Subsequently cut the material.

The fine fillers are to be applied simply and more elegantly, with the rubber float MC-Top Rubber.

TIP

We recommend you wear safety glasses and gloves for all concrete cosmetic processes.

Rubbing down

In order to achieve a fine, smooth surface, the filler needs to be rubbed down with the abrasion sponge MC-Top Sponge. Both sides of the sponge can be used for this purpose.

Rubbing down should only be done with **little water**, so as to maintain the colour fastness of the filler and to avoid the formation of smears.

After treatment

In order to achieve an immaculate surface, the freshly applied filler must be protected against too fast drying through sun and wind exposure or too early weathering. The curing time usually takes 3 days.

TIP

To reduce stress cracks, we recommend adding Repacryl to the mixing water. Mixing ratio 1:3 (Repacryl : Water)

Small scale fine fillings

Closing pores and cavities

The substrate needs to be slightly pre wetted, as described on page 10. Even the smallest pores and cavities can be closed with Emcefix-Spachtel F.

MC-Top Rubber is perfectly right for applying the filler, as it helps repair the concrete surface without excess material and edges (see page 48).

Large scale fine fillings

Surface finish

Emcefix-Spachtel F is not only used for fine fillings and repairs of concrete surfaces, but also as high class fine filler and it is mainly applied as a surface finish for large area fillings and for levelling colour variations. Fine filling works can, of course, also be made using Nafuquick.

The optimal finish of every fine filling contains rubbing down the surface with our MC-Top Sponge. It makes the surface smoother and of even higher quality (see page 49).

TIP

For sanding or non-solid substrates, we recommend surface hardening with MC-Estribond T15. The material is applied in one layer or, if necessary, in several layers with a roler. Then the filling can be done.

Small scale coarse fillings

Closing honey combs

Bonding agent

The stirred Emcefix-Haftbrücke is carefully brushed onto the matt moist, pre wetted substrate. This can be done with a paint brush, broad brush, etc.

Application of filler

Emcefix-Spachtel G is freshly applied onto the Emcefix-Haftbrücke in the required layer thickness.

Re cutting

The contours of the concrete element can easily be reshaped by cutting the excess filling when it is semi plastic.

TIP

Using Fluresit 4-DS can significantly accelerate the hardening of the filler and the bonding agent (see page 36/37).

TIP

Afterwards, the dried area can be perfectly adapted to the original concrete in its colour and texture by using fine filler.

Large scale coarse fillings

Fibre-reinforced coarse fillings

Emcefix-Spachtel G extra/ultra are fibre-reinforced coarse fillers. Due to the high-quality special fibres, both filler are particularly suitable for large coarse filling works.

Apply carefully the stirred Emcefix-Haftbrücke onto the matt-moist, pre-wetted substrate. This can be done with a paint brush or broad brush.

Emcefix-Spachtel G extra is filled onto the fresh, matt moist bonding agent. The filler can be applied in a single layer of 6–25 mm and in a double layer of up to 50 mm.

Emcefix-Spachtel G ultra is applied directly onto the matt-moist substrate. It should be noted that at this case a bonding agent is not necessary. The filler can be applied in a single layer of 6–40 mm and in a double layer of up to 80 mm.

TIP

The second layer can be applied without a bonding agent, if the first layer has cured. When the first layer has completely dried, Emcefix-Haftbrücke must be applied again before application of the second layer.

Closing rigid precast concrete element heading joints

Closing joints

Nafuquick Uni is applied with excess into the pre wetted pre-cast concrete element joint in up to 20 mm thickness with a trowel or finishing trowel and is then freshly smoothed. In order to achieve heading joints which can later be papered, the excess material is stiffened. The excess material is then re cut with a filler and the joint is brushed off with the semi moist MC-Top Sponge.

TIP

Adding the polymer additive Repacryl to stirring water can improve the adhesion to the substrate.

Using cosmetic slurries

Slurrying

Pipe joints are pre wetted as usual. Afterwards, the cosmetic slurry mixed from the polymer additive Repacryl and Nafuquick is applied with the MC-Top Sponge.

Please see the recommended mixture ratio on pages 30/31.

Re-profiling of broken edges without subsequent loads

Bounding agent and coarse filling

Emcefix-Spachtel G is applied with excess to the freshly applied Emcefix-Haftbrücke. Even broken edges (chamfer strips) can easily be re-profiled.

Recutting

The contours of the concrete elements can easily be reshaped by cutting the excess filler in semi plastic texture.

Fine filling

In order to produce fair faced concrete quality, the fine filler is applied onto the dried coarse filler. To achieve a fine, smooth surface, the filling needs to be rubbed down with the MC-Top Sponge (see page 13).

TIP

Cured fine fillers can also be re-profiled with the a grinder.

Re-profiling of broken edges with subsequent loads

Primer

The substrate must be frost free, dry, clean, solid, and free from anti-adhesive substances.

The special primer MC-Top Primer S is applied to smooth, highly absorptive substrates with a brush.

Grouting

After the primer appears touch-dry (approx. after 0,5–1 hours at 20 °C) Reparoxyd SB/WG are grouted into the previously prepared formwork.

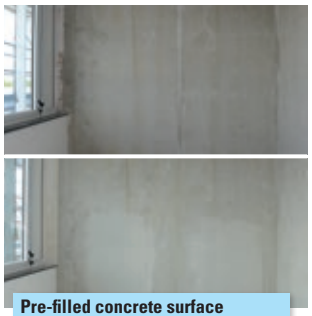
Abrading

Due to the extremely high early strengths of Reparoxyd SB/WG, the surface can be abraded as soon as 30 minutes after application.

TIP

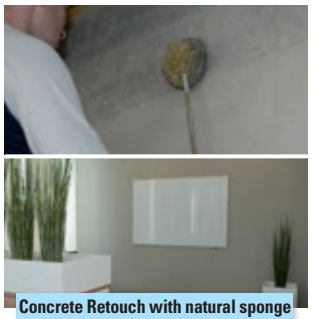
By reducing the fluid component, Reparoxyd SB/WG can be mixed in consistency suitable for trowel application.

Concrete Retouch on pre-filled surfaces



Pre-filled concrete surface

Repacryl mix



Concrete Retouch with natural sponge

Final result

Once the fine and super-fine fillers have dried, the concrete retouching work can begin. Dilute Repacryl light grey with water. Dab this mixture on the surface, using a natural sponge. Depending on the substrate color, darken the mixture with Repecryl pale grey and concrete grey.

TIP

The gloss level can be adjusted through addition of cosmetic fillers of MC, e. g. Emcefix-Spachtel F extra fein, to the mix.

Concrete Retouch on non-filled surfaces

Before

After

Concrete Retouch can be applied also on non-filled surfaces. For the application respect page 28.

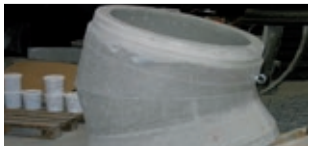
Concrete Retouch outdoor

Once the Concrete Retouch has dried, treat the surface with a hydrophobic impregnation such as Nisiwa L.

TIP

In outdoor areas Concrete Retouch is to be protected with a hydrophobic impregnation. That will ensure that the concrete surface is having the same absorbency. Apply hydrophobic impregnation overall.

Adhesion of concrete elements with SX 481 E



Substrate testing

Before adhesion with SX 481 E, the substrate must be tested.
An adhesive tensile strength of 1.5 N/mm² is required. Acceptable substrate moisture has to be less than 4%.

Substrate preparation

The substrate has to be clean, dry, hard, solid and free of all loose particles, dust, oil and releasing substances.

Mixing

The two components of SX 481 E have to be mixed accurately with a slow rotating agitator (approx. 300-400 rpm). Both are delivered in pre-packed quantities. It is recommended to use anchor shaped agitator. The component B has to be added completely into component A and mixed until it is homogeneous. After mixing the compound must be placed into another clean bucket and briefly mixed again.

Application

The processing of SX 481 E is carried out with a trowel.
The components, which have to be bonded must be provided each with material. On the first component the adhesive should be applied in thin layer. On the second component SX 481 E should be applied in thick layer with the desired amount. Spacers are required.

Additional products for Concrete Cosmetics

The range of MC cosmetic fillers is completed by unique additives and special mortars.

	Purpose	Processing time at 20 °C	Colour
Fast mortar			
MC-Fix ST	Stops water seepage at concrete elements within seconds	approx. 60 seconds	grey
Mc-Fix SM	Plug mortar for closing water seepages	approx. 60–120 seconds	grey
Emfix	Rapid hardening assembly aid	approx. 2–3 minutes	grey
Rapid repair mortar	Two component mortar based on acrylates for highly strained concrete areas		
Reparoxyd SB fine	Repair of broken edges, small holes, dislodged lifting bolts, etc. • max grain size: 0.4 mm • for layer thicknesses up to 20 mm • quick hardening • wear resistant • workable until -10 °C • max. area < 1.0 m²	approx. 10 min/20 °C	light grey
Reparoxyd WG coarse	Repair of concrete floors • max grain size: 2.0 mm • for layer thicknesses up to 40 mm • quick hardening • wear resistant • workable until -10 °C • max. area < 2.0 m²	approx. 12 min/20 °C	dark grey

Polymer additive

Repacryl
-pale grey
-light grey
-concrete grey

Purpose		Recommended dosage (Details given in parts by volume / p.b.v.)	
Unique polymer additive for Concrete Cosmetics and Concrete Retouch			
For ageing MC cosmetic fillers.	• Increases adhesion and improves the sliding effect of the filler.	1 p.b.v. 1–3 p.b.v.	Repacryl water
For use of MC cosmetic fillers at freshly deshuttered concrete elements with high body temperature and for repairs of concrete areas in direct sunlight.	• Achieves optimal water retention and minimises burning of filler. • Minimises stress cracks.	1 p.b.v. 2 p.b.v.	Repacryl water
For optimal colour adjustment of the MC cosmetic fillers to the concrete substrate.	• Repacryl pale grey: lightens shades of grey. • Repacryl concrete grey: adjusts shades of grey. • Repacryl light grey: darkens shades of grey.	1 p.b.v. 1–3 p.b.v.	Repacryl water
For use of MC cosmetic fillers in winter conditions.	Fillers aged with Repacryl can also be processed at 0 °C and can be dried with a burner in order to prevent frost effects when fresh.	1 p.b.v. 2 p.b.v.	Repacryl water
For processing MC fine fillers with a roller.	Emcefix-Spachtel F can be measured in such a way with Repacryl and water that the filler can be brushed on like a paint coat.	1 p.b.v. 2 p.b.v.	Repacryl water
For use of MC fine fillers as cosmetic slurry.	Nafuquick can be measured in such a way with Repacryl and water that it gains slurriable texture.	1 p.b.v. 2 p.b.v.	Repacryl water
For natural and smooth correction with Concrete Retouch	Repacryl diluted with water and retouched with a natural sponge on the surface	variable	

	Purpose		Recommended dosage
Polymer additive	Polymer additive for enhancement of MC cosmetic fillers		(Details given in parts by volume / p.b.v.)
Murafan 39	• for enhancement of MC cosmetic fillers • production of mineral bondig agents • for improving workability	• Increases adhesion of filler or bonding agent. • Increases elasticity of the filler.	1 p.b.v. Murafan 39 2–6 p.b.v. water

	Purpose	Processing time at 20 °C
Accelerator	Liquid accelerator for MC cosmetic fillers	
Fluresit 4-DS	• for fast hardening of fillers • no influence on colour variation	approx. 5 minutes for mixing ratio 1:7 (accelerator : water) (depending on dosage, temperature and type of filler)

Cleaning agent		
Donnitil 3 X	MC-Entöler	MC-Rost Ex
• removes efflorescence • removes cement smears and other cement based soiling of components and construction machines	• removes deep oil pollution	• removes rust stains from concrete surfaces

Quick assembling and fixture works at brick walls

Emfix

Emfix is quick hardening, water proof and protects against corrosion.

- Substrate must be slightly pre-wetted.
- The fixture holes must be widened in dovetail shape, so the component to be fixed is completely covered in Emfix.

Winter use of cosmetic fillers

Accelerated drying by use of burners

MC cosmetic fillers aged with Repacryl can be scorched with a burner in winter in temperatures of 0 to +5 °C (surrounding and substrate temperature) in order to accelerate the drying process and to avoid frost to seep into the fresh filler. A condition for this is that the concrete substrate must be warmed with the flame jet previous to the application of the filler!

Concrete cleaning

Removing rust stains from concrete with MC-Rost Ex

1. Pre wet substrate (see page 10)
2. Brush or spray on MC-Rost Ex.
3. Important: exposure time max. 5 minutes!
4. Visual check: rust stains must change colour to purple.
5. Rinse with water.
6. Repeat process several times, if needed.
   For persistent soiling, the additional use of a mechanic cleansing brush is recommended.

MC-Rost Ex is a highly effective, odour intense rust remover.
In closed space, please provide sufficient ventilation.

Removing oil stains with MC-Entöler

Oil stained concrete areas can easily be cleaned with MC-Entöler.

1. Apply MC-Entöler.
2. Exposure time: approx. 10–15 minutes.
3. Rinse with water and scrub area with scrubbing brush or hard brush.
4. Clean the surface with water
5. For persistent stains, repeat process several times.

Old, deep layered oil stains cannot be removed from the concrete area completely with MC-Entöler.

Concrete cleaning

Removing efflorescence, cement layers, mortar and concrete stains with Donnitil 3 X

Cement layers, mortar and concrete stains can easily be removed with Donnitil 3X.

1. Pre-wet substrate (see page 36/37).
2. Stir Donnitil 3 X in recommended mixture and apply to concrete area with brush, broom, or paint brush.
3. Exposure time: approx. 5–10 minutes.
4. Rinse with water and scrub area with scrubbing brush or hard brush.
5. For persistent stains, repeat process several times.

The surfaces of cement based materials can be harmed by Donnitil 3 X.

Recommended mixing ratio for Donnitil 3 X:	
Cement mortar or concrete stains on rough concrete surfaces:	1 p.b.w. Donnitil 3 X 4 p.b.w. water
Lime mortar stains:	1 p.b.w. Donnitil 3 X 6 p.b.w. water
Lime and cement-smears on front areas:	1 p.b.w. Donnitil 3 X 15–20 p.b.w. water

TIP

Donnitil 3 X dissolves faster in lukewarm water.

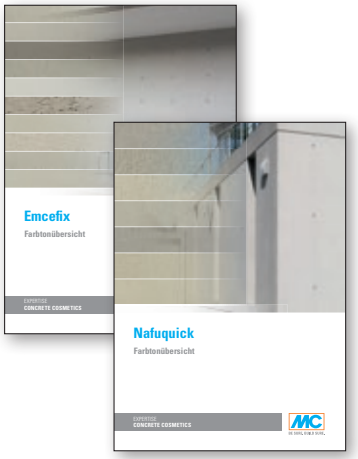
Colour adjustment of cosmetic fillers

Unique colour range

The high class MC cosmetic fillers allow for adjustment of almost any concrete colour. The diversity of our colour range begins with the standard colours. Each fine filler is offered in various shades of grey which, in turn, can be mixed with each other.

Additionally, with the choice of various plastic additives, e. g. Repacryl, not only the processing properties but also the colour of the material can be varied.

Usually, every shade of grey can be created with MC. It is also possible to generate coloured MC cosmetic fillers by adding special pigments.



Colour overview

Ask us today to send you your free colour overview for our MC cosmetic fillers. It will help you determine the colour for your different fillers!

The experts at MC are happy to support you on site when choosing the best filler to change visual defects of the concrete into top notch fair faced concrete areas.

In order to convince you of MC's high performance, our applications engineers are at your service. We can also develop test areas on site upon request.

Concrete Cosmetics on exterior surfaces

Hydrophobic impegnation with Nisiwa L and SN

Nisiwa is invisible and water repellent. Those hydrophobic impregnators are liquid and can be applied by brush or by spraying.

The application is done from the bottom up in a vertical direction and then crosswise in the horizontal direction. The procedure is in two layers.

Nisiwa is suitable for hydrophobic impregnation of alkaline, cementitious surfaces, especially after Concrete Cosmetics or Concrete Retouch.

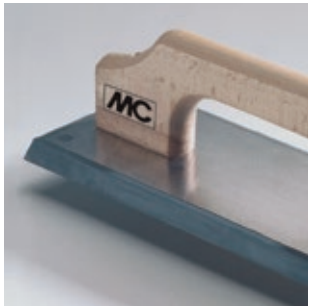
Hydrophobic impegnation with Nisiwa C

Nisiwa C is invisible and water repellent. This solvent-free, pasty-like creme is also suitable for hydrophobic impregnation of surfaces, repaired with fillers.

Nisiwa C is applied on smaller surfaces with a brush or lambskin roller from the bottom up and crosswise. For larger areas, application is effected with a suitable spray equipment in airless process.

The recommended amount per layer is 100-150 g/m^2.
Having highly absorbent and porous surfaces amounts of up to 400 g/m^2 can be applied. A second layer is possible at any time, but usually not necessary.

Special tools for Concrete Cosmetics and Concrete Retouch



MC-Top Rubber

MC-Top Rubber is particularly fit for applying fine and super-fine concrete cosmetic fillers, especially for pores and cavities.

The concrete area to be processed can be remodelled without edges and excess material using the fine fillers of MC.

TIPP

Do not splash water directly onto the filler to be brushed down! The black side of the sponge should be slightly wetted and used to rub down filler surfaces.

MC-Top Sponge

Our cosmetic tool MC-Top Sponge consists of a hard sponge, a foam rubber layer and a sponge rubber layer.

The foam rubber layer (black) enables clean re-profiling of edges and corners. The softer sponge rubber layer (white) is better used for rubbing down area fillings with MC fine fillers.

Excess water can be squeezed out by up to 90%. This is of particular advantage, as the fine fillers must only be remodelled with a small amount of water in order to avoid smears on the surface.

MC-Concretefinish Set

This all-in-one set consists of all tools, which are necessary for the application of Concrete Cosmetics and Concrete Retouch. The tool set consists of:

- Trowel
- Smothening trowel
- MC-Top Rubber
- MC-Top Sponge
- Grinder
- MC-Top Natural Sponge
- Protective gloves
- Protective glasses

Concrete Cosmetics of MC: perfect finish for concrete

System components

- Bounding agents
- Coarse filler
- Fine and super-fine filler
- Adhesive filler
- Quick setting mortar
- Quick setting repair mortar

Additional products

- Accelerator
- Polymer additive
- Hydrophobic impregnation
- Cleaning agents
- Tools

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