

**Bemix Conheft is a high-performance, cement-based and polymer-modified dry mortar. For protection and repair of concrete structures in tough environments. A sulfate-resistant, low-alkaline and shrinkage-reduced fine mortar with a flexible area of use. Used as adhesion-improving slurry for increased adhesion to concrete and steel, as well as surface slurry or finish filler and leveling mortar in thin layers on concrete surfaces. Excellent as a base for coming surface protection.**

## Work description

### USE

- adhesive slurry
- sealing of pores and leveling mortar
- surface slurry
- horizontal and vertical application
- partial insertions of cavities up to 10mm per layer and a maximum of 50mm in diameter
- preserves and restores passivity with increased coating of reinforcing steel with additional cementitious mortar
- increased adhesion between steel and repair mortar
- as a cover layer coating
- as an extra wear layer on concrete surfaces

### ADVANTAGES

- single component
- provides effective protection against carbonation and penetration of chlorides
- open to diffusion
- excellent substrate for surface protection, e.g. hydrophobic impregnation
- very good adhesion
- very good frost resistance in a chloride environment
- the product meets the conditions according to EN 1504-3 (3.1 Concrete restoration by application of mortar by hand, 4.4 Structural strengthening by addition of mortar or concrete, 7.1 Increased coating of reinforcement with additional cementitious mortar or concrete and according to 7.2 Replacement of contaminated or carbonated concrete)
- for structures requiring R3 and R4 classed repair mortars

### SYSTEMSTRUCTURE

- 1.1 Pre-treatment of substrate - concrete
- 1.2 Pre-treatment of substrate - steel reinforcement
- 2.1 Protect reinforcement - increased coating with cementitious mortar on steel reinforcement
- 2.2 Adhesive bond - powerful bond between mortar and concrete substrate
3. Leveling mortar in thin layers
4. After-treatment of the surface

### PRE-TREATMENT

#### 1.1 Pre-treatment of substrate - concrete:

The substrate must be clean and free of dust, grease, chlorides and other impurities that can impair adhesion. In the case of methods for pre-treating substrates that can lead to joint damage near the surface of remaining old concrete, e.g. chiseling, tapping, milling, blasting, the treated surfaces must be finished with, e.g. high-pressure washing. The concrete substrate should have a roughened and raw surface with densely occurring irregularities with an average of ~1mm. Tensile strength average value in the substrate should be >1 N/mm<sup>2</sup> and the concrete quality should be at least C30/37. The connecting edges of the damaged area should be perpendicular to prevent the repair from loosening. Water the substrate sufficiently at intervals during 24 hours before applying the product, watering is required at least 2 hours before applying Bemix Conheft. Water used must be clean drinking water. Before application, remove excess water, e.g. with a clean sponge. The surface must have a dark matt appearance without shine, surface pores and pits must not contain water, condensation water must not be on the surface as it can impair adhesion. The substrate must be saturated with water but in a surface dry state.

#### 1.2 Pre-treatment of substrate - steel reinforcement:

Rust, mortar, concrete, dust, chlorides and other loose or harmful material that reduces adhesion or contributes to corrosion must be removed from the steel reinforcement using a suitable method and degree of cleanliness.

### MIXTURE

Use a high-speed mixer when mixing. Measure the water with a measuring vessel or weigh the water to obtain a high quality of the

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end product in accordance with the technical data. The temperature of the finished mass should always be 20 °C.

1. Pour water and add dry mortar 2. Mix for about 3 minutes 3. Leave to mature for about 2 minutes 4. Mix again for about 0.5 minutes. Stir the material again if necessary. It is not permitted to add more water when stirring.

## APPLICATION

### 2.1 Protect reinforcement:

Depending on requirements, exposed reinforcement can be applied with Conheft as an increased coating of the reinforcing steel with a cementitious mortar, this to preserve or restore passivity. The surface of the reinforcing steel should be coated evenly and completely immediately after cleaning/derusting the steel. Application should take place in two rounds to a total layer thickness  $\geq 2$  mm. The first layer is brushed in a  $\sim 1$  mm thick layer using a brush/brush on the cleaned reinforcement. When the first layer has hardened, the mortar must be sufficiently hardened that it does not detach from the reinforcing steel during the second application, waiting time approx. 2-3 hours at 20 °C. When the second layer has also hardened on the surface, grouting of the concrete substrate and repair of the damage can begin.

### 2.2 Adhesive slurry:

The concrete substrate is slurred or scraped with Conheft in a layer thickness of  $\sim 2$  mm so that pores and concrete surfaces are completely covered. To ensure adhesion on uneven concrete substrates, Conheft is most easily applied using a stronger brush. For smooth surfaces, Bemix Conheft is advantageously applied as a thin scraping putty with, for example, a grinding steel alt. a steel trowel on the moistened substrate. Subsequent leveling layers are applied almost wet-on-wet when the adhesive slurry has hardened but has not had time to dry.

### 3. Leveling mortar in thin layers:

Depending on the depth of the damage, Conheft is applied as a leveling mortar in thin layers or when there are requirements for the production of a fine and even surface. For repairs thicker than the recommended layer thickness, the next layer is applied when the first has hardened sufficiently and is surface dry to support subsequent layers, preferably within 24 hours. The surface between the layers must have a rough structure and unevenness at least as rough as  $d_{max}$  of the mortar applied to provide good adhesion. The subsequent layer must also be scraped with Conheft and then leveled to the desired layer thickness almost "wet on wet". Conheft provides an excellent finished surface layer or as a base for any upcoming surface protection. Surfaces exposed to light mechanical abrasion should be applied with a minimum 3mm layer. For rough laying, for example, Bemix repair mortar Conrep SR or R50 can be used instead. If necessary to ensure good adhesion, the repair mortar is applied when the slurry has hardened but has not yet dried, almost wet on wet.

## INFORMATION

Avoid application in direct sunlight and/or strong wind.

## TOOL

Conheft is applied with a suitable tool, steel trowel, grinding steel, repair trowel, trowel or a harder brush.

## PROCESSING

The surface is only processed when the material has stiffened a little. Depending on the desired aesthetics or function on the surface, the mill is processed by e.g. felting, slathering with a coarse brush/brush, smoothing or scraping. The putty strokes can be smoothed with a slightly moistened sponge or brush on the slightly damp mortar.

## HARDENING

### 4. After-treatment of the surface:

Free and unprotected surfaces are protected immediately after casting so that shrinkage and desiccation cracks do not occur. Prevent rapid drying out from sun, wind, heat radiation, etc. with a protective cover, make sure that plastic/covering foil does not touch the surface of the mortar. Re-water if necessary after the surface has been protected for the first day. After 2-3 days, the covering is removed and re-watering is completed so that drying and film formation can take place. **INFORMATION!** Too early re-watering can negatively affect the surface and the color can become more flaming, a completely even color tone on the surface of the mortar is not possible. If Bemix Conheft is exposed to dripping water, rain or drizzle before sufficient curing is achieved, depending on the temperature and humidity, white lime deposits may appear as streaks or spots on the surface. Lime deposits decrease over time.

For specific requirements on carrying out repairs, refer to EN 1504-10.

## Technical data

Generally			
Property	Requirement	Declared values	Method

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Density of hardened mortar after 28 days	-	~ 2300-2350 kg/m <sup>3</sup>	EN 12190:1996
Density dry mortar	-	~ 2300 ± 50 kg/m <sup>3</sup>	-
Type of mortar	-	PCC (polymer modified hydraulic cement mortar)	-
Bindemedel	-	Cement, CEM III/A-V 42,5 N MH/LA/NSR	-
Ballast	-	D <sub>max</sub> ~0,50 mm natursand	-
Additive	-	Polymer powder	-
Chloride content	≤ 0,05 %	< 0,025%	
Carbonation resistance	≤ 2mm	≤ 2mm	EN 13295
Appearance/Colour	-	Grey	
Leveling mortar			
Property	Requirement	Declared values	Method
Material consumption	-	~ 2kg/m <sup>2</sup> at 1 mm layer thickness	-
Minimum layer thickness	-	≥ 1 mm	-
Maximum layer thickness	-	≤ 6 mm	-
Maximum water addition	-	1,6 L per 10 kg dry mortar	-
w/c ratio	≤ 0,45	< 0,40	-
Adhesive slurry			
Property	Requirement	Declared values	Method
Material consumption	-	~ 2kg/m <sup>2</sup> at 1 mm layer thickness	
Minimum layer thickness	-	≥ 2 mm	
Maximum layer thickness	-	≤ 4 mm	
Maximum water addition	-	1,6 L per 10 kg dry mortar	
Adhesion strength wet on wet with Conrep SR	-	> 2 MPa (klass R4)	EN 1542
Fresh mortar			
Property	Requirement	Declared values	Method
Consistency with maximum water addition after 10 min	-	≥ 190-220 mm	EN 13395-1
Water separation	-	0	SS 137540
Air content	-	~ 7-10%	EN 1015-7
Processing time	-	~ 45 min at +20 °C	-
Shrinkage [%]	≤ 2 ‰	≤ 2 ‰	SS-EN 12390-16
Rec. Lowest application temperature	-	≥ +5°C (Weather and wind must always be taken into account)	-
Rec. Highest application temperature	-	< +30°C (Weather and wind must always be taken into account)	-

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Property	Requirement	Declared values	Method
Hardened mortar			
Adhesion strength to concrete substrate	≥ 2 MPa, class R4	≥ 2,5 MPa, class R4	EN 1542
Adhesion strength to welding steelplate	-	≥ 1 MPa at 2 mm layer	-
Restrained shrinkage	≥ 2,0 MPa, class R4	≥ 2,0 MPa, class R4	EN 12617-4
Abrasion resistance	≤ 3000 mg	<2470 mg = good abrasion resistance for wear layer	SS-EN ISO 5470-1:2016
Frost resistance 56 cycles, Flaking	Good	Very good	SS 137244 1A [chloride environment]
Tryckhållfasthet vid 20°C			
After 1 Day	-	≥ 20 MPa	EN 12190
After 28 days	≥ 45 MPa, class R4	≥ 45 MPa	EN 12190
Waterproof	Yes	Yes	SS137003:201
Capillary absorption	≤ 0,5 kg	< 0,25 kg	EN 13057
Resistance to temperature change [freezing/thawing]	≥ 2,0 MPa, class R4	> 4,0 MPa	EN 13687-2
Modulus of elasticity	≥ 20 GPa, class R4	> 20 GPa, class R4	EN 13412
Friction properties / slip resistance	Class I: >40 units wet tested Class II: >40 units dry tested Class III: >55 units wet tested	Approved	EN 13295
Fire rating	-	A2-s1, d0	EN 13823
Exposure classes	-	XC4, XD3, XS3, XF4, XA1 according to EN 206	SS 137003:2015 1A
Vapor resistance factor, [μ]	-	99.1 (μ = sd value/thickness)	SS-EN ISO 12572:2016
Water vapor permeability, sd value [m]	class I sd < 5 m (permeable to water vapor)	Sd value (calculation) = layer thickness x 99.1 Ex at 5 mm thickness, sd value = 0.005 x 99.1 ~0.5 m	SS-EN ISO 12572:2016, when testing from 94→50% in RH

## Packaging

The product is delivered in a 10 kg plastic bucket

## Storage

Use within 18 months from the date of manufacture on the packaging. Requires dry storage and unbroken packaging

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