

# MAPEFER 1K

One-component corrosion-inhibiting cement mortar for the protection of reinforcing rods



## WHERE TO USE

- Corrosion-inhibiting protection of concrete reinforcing rods
- Adhesion improver for concrete repair mortars.

### Some application examples

Re-alkalising corrosion-inhibiting protection for reinforcing rods in the repair of concrete carried out with shrinkage-compensated mortars from the **Mapegrout** range or with standard cement mortars modified with synthetic based latex. It can also be used for underground concrete construction.

## TECHNICAL CHARACTERISTICS

**Mapefer 1K** is a one-component mortar prepared according to a formula developed in the MAPEI Research & Development laboratories based on polymers in powderform, cementitious binders and corrosion inhibitors to be applied on reinforcing rods to prevent rust formation.

Mixed with water, **Mapefer 1K** becomes an highly workable mortar that is easy to apply.

After hardening, **Mapefer 1K** is resistant to saline fog according to EN 15183 and impermeable to water and aggressive gases in the atmosphere.

The corrosion-inhibiting action of **Mapefer 1K** is provided through the following principal factors:

- high alkalinity;
- excellent adhesion to metal;
- presence of corrosion-inhibitors.

**Mapefer 1K** meets the requirements defined by EN 1504-9 (*"Products and systems for the protection and repair of concrete structures: definitions, requirements, quality control and evaluation of conformity - General principles for the use of products and systems"*) and the minimum requirements claimed by EN 1504-7 (*"Reinforcement corrosion protection"*).

## RECOMMENDATIONS

- Do not further dilute **Mapefer 1K** with water when the product begins to set.
- Do not add cement or aggregates to **Mapefer 1K**.
- Apply **Mapefer 1K** immediately after sandblasting (do not leave clean rods exposed and without protection for long periods).
- Do not apply **Mapefer 1K** when the temperature is below +5°C.

# APPLICATION PROCEDURE

## TECHNICAL INFORMATION FOR THE APPLICATION

|   |  |
|---|--|
| Composition of mix:                         | 5 kg of <b>Mapefer 1K</b><br>1.0-1.1 kg of water           |
| Application temperature range:              | environmental and substrate temperature from +5°C to +35°C |
| Pot life of mix:                            | approx. 1 hour (at +20°C)                                  |
| Total thickness (2 coats):                  | min. 2 mm  |
| Waiting time between 2 coats:               | approx. 2 hours  |
| Waiting time before applying repair mortar: | 6 – 24 hours   |

### Preparing the rods

To ensure that **Mapefer 1K** is able to develop its corrosion-inhibiting properties efficiently, it is essential that, before treatment, the rods are completely cleaned from rust and any other contaminant or product residue that could affect the product's adhesion.

Sandblasting is recommended to clean the rods down to metal.

If for logistical reasons this is not possible, brush the metal surface with a specific steel brush to remove the oxidised and deteriorated layer.

### Preparing the product

Pour 1.0-1.1 l of clean water into a clean container and, while mixing, slowly disperse 5 kg of **Mapefer 1K**. Mix the product until a lump-free homogeneous paste is obtained. Once prepared, **Mapefer 1K** must be applied within 1 hour.

Instructions for the preparation of mortar for Lab testing samples can be found in the TECHNICAL DATA section.

### Application

Apply two coats of **Mapefer 1K** with a brush.

The second coat can be applied approximately 2 hours after the application of the first coat and preferably within 24 hours.

It is recommended to completely cover the surfaces of the rods in a homogeneous coat. The total thickness of the two coats must be at least 2 mm.

Inevitably, during the **Mapefer 1K** application, the surrounding concrete will also get coated. This will not create problems of bonding of other mortars that will be used for the reconstruction. Repairs with products from the **Mapegrout** range must be carried out once **Mapefer 1K** has dried (approximately 6 hours at +20°C).

## PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

In hot weather do not expose the mixed material to direct sunlight, because the pot life will be reduced.

### Cleaning

While still fresh, **Mapefer 1K** can be removed from brushes and tools with water. Once hardened, it can only be removed mechanically.

## CONSUMPTION

100 g/m per reinforcing rod with an 8 mm diameter and 200 g/m per reinforcing rod with 16 mm (2 mm of applied product).

## PACKAGING

The product is available in cartons each one containing 4 bags of 5 kg.

## STORAGE

Mapefer 1K may be stored for up to 24 months in its original packaging in a dry place at a temperature not below +5°C.

## SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website [www.mapei.com](http://www.mapei.com).

PRODUCT FOR PROFESSIONAL USE.

## TECHNICAL DATA (typical values)

### PRODUCT IDENTITY

|                            |        |
|----------------------------|--------|
| Consistency:               | powder |
| Maximum size of aggregate: | 0.5 mm |

### TECHNICAL INFORMATION FOR THE PREPARATION OF THE PRODUCT

|                     |  |
|---------------------|--|
| Composition of mix: | 100 parts by weight of Mapefer 1K with 20.5 % water. |
| Preparation of mix: | product mixing according to EN 196-1                 |

### CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)

|                     |                        |
|---------------------|------------------------|
| Colour of mix:      | Blue                   |
| Consistency of mix: | Thixotropic paste      |
| Density of mix:     | 1800 kg/m <sup>3</sup> |

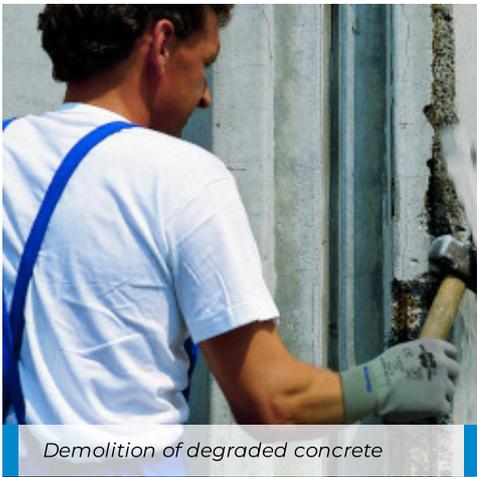
### FINAL PERFORMANCES

*Curing at +23°C – 50% R.H. if not differently specified in test methods*

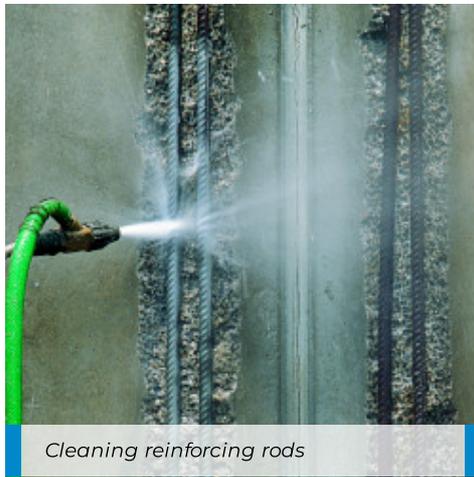
| Performance characteristic  | Test method | Requirements EN 1504-7   | Product performance |
|---|-------------|--|---------------------|
| Bond strength to concrete by pull-off:  | EN 1542     | not required   | > 2.0 MPa           |
| Shear adhesion – expressed as tensile adhesion strength of coated reinforcing rods at a movement of $\delta = 0.1$ mm:  | EN 15184    | ≥ 80% of tensile adhesion determined for non-coated rods   | Test passed         |
| Corrosion resistance:<br>– 10 condensation cycles in water<br>– 10 sulphur dioxide cycles according to EN ISO 6988<br>– 5 days in salt spray according to EN 60068-2-11 | EN 15183    | After cycle series, coated steel rods must be free from corrosion. Rust penetration at the edge of non-coated steel plate must be less than 1 mm | Test passed         |

NOTES:

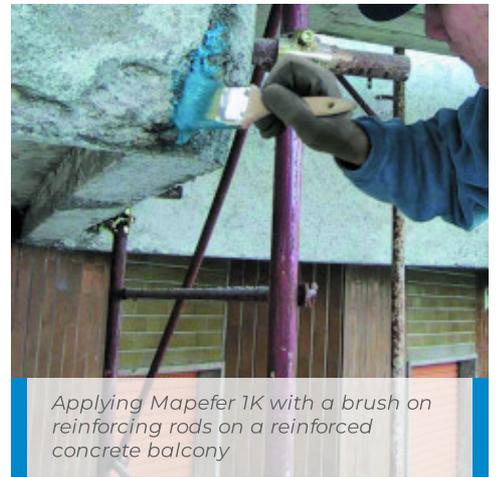
*Preparation of test samples: according to "Application procedure" paragraph*



Demolition of degraded concrete



Cleaning reinforcing rods



Applying Mapefer 1K with a brush on reinforcing rods on a reinforced concrete balcony



Reinforcing rods on the front side of a balcony treated with Mapefer 1K

## WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product. Please refer to the current version of the Technical Data Sheet, available from our website [www.mapei.com](http://www.mapei.com)

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