

## TECHNICAL DATA SHEET

# BETONPROTEKT RT

Fibre reinforced thixotropic repair mortar EN 1504-3: PCC mortar for concrete restoration, class R4



|                            |                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRODUCT DESCRIPTION</b> | One-component, micro-reinforced, thixotropic, sulphate-resistant PCC repair mortar.                                                                                                                                                                                                                                                                                           |
| <b>Field of use</b>        | For restoration of visible damages on the concrete surface (segregation zones, cracks, corroded concrete etc.), for levelling concrete surfaces for restructuring of corners, stairs, edges etc. Layer thickness (one application) min. 5 to max. 40 mm.                                                                                                                      |
| <b>Product properties</b>  | <ul style="list-style-type: none"> <li>• Excellent adhesion to the substrate</li> <li>• Due to its thixotropic properties it is possible to apply the repair mortar on walls and ceilings without slip, layer thickness up to 40 mm.</li> <li>• Limited shrinkage</li> <li>• High flexural strengths and compressive strengths</li> <li>• High sulphate-resistance</li> </ul> |

|                                    |                                                                                                                                                                     |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRODUCT DATA</b>                |                                                                                                                                                                     |
| <b>Basic information</b>           |                                                                                                                                                                     |
| <b>Appearance</b>                  | Grey powder                                                                                                                                                         |
| <b>Packing</b>                     | 25 kg in bag (plasticated) / 1200 kg (48 x 25 kg) on palette                                                                                                        |
| <b>Storage and expiration date</b> | 12 months from date of production if stored properly in undamaged original sealed packaging in dry and cool conditions. Date of production is printed on packaging. |
| <b>Technical data</b>              |                                                                                                                                                                     |
| <b>Type of product</b>             | Cementitious polymer modified mortar                                                                                                                                |
| <b>pH</b>                          | 11-13,5 at 20°C                                                                                                                                                     |

Table 1: Characteristic of dry mixture BETONPROTEKT RT

| Characteristic                                                | Testing procedure | Unit | Requirement in accordance with EN 1504-3 | Declare value |
|---------------------------------------------------------------|-------------------|------|------------------------------------------|---------------|
| Colour and appearance                                         | -                 | mm   | -                                        | 3,15          |
| Recommended thickness of one layer:<br>- minimum<br>- maximum | -                 | mm   | -                                        | 10<br>40      |
| Content of chloride ions                                      | EN 1015-17        |      | ≤ 0,05                                   | ≤ 0,05        |

Table 2: Characteristic of fresh mortar BETONPROTEKT RT

| Characteristic                                          | Testing procedure | Unit | Requirement in accordance with EN 1504-3 | Declare value                                          |
|---------------------------------------------------------|-------------------|------|------------------------------------------|--------------------------------------------------------|
| Mixing water                                            | -                 | l    | -                                        | 3,8-4,3 per 25 kg                                      |
| Usage time                                              | -                 | min  | -                                        | approx. 30-60 depend on water quantity and temperature |
| Temperature by application of mortar, substrate and air | -                 | °C   | -                                        | +5 to +30<br>Optimal:<br>+15 to +25                    |

Table 3: Characteristic of hardened mortar BETONPROTEKT RT

| Characteristic | Testing procedure | Unit | Class | Requirement in accordance with EN 1504-3 | Declare value |
|----------------|-------------------|------|-------|------------------------------------------|---------------|
|                |                   |      |       |                                          |               |

|                                                                                             |            |                                        |    |                                     |                               |
|---------------------------------------------------------------------------------------------|------------|----------------------------------------|----|-------------------------------------|-------------------------------|
| Compressive strength:<br>- 1 day<br>- 7 days<br>-28 days                                    | EN 12190   | MPa                                    | R4 | -<br>-<br>> 45                      | > 15<br>> 35<br>> 45          |
| Density                                                                                     | EN 12190   | kg/m <sup>3</sup>                      | -  | -                                   | 2100 ± 5%                     |
| Bond strength after 28 days                                                                 | EN 1542    | MPa                                    | R4 | > 2,0                               | > 2,0                         |
| Resistance to carbonation                                                                   | EN 13295   | mm                                     | R4 | d <sub>k</sub> < ref.concrete = 2,5 | d <sub>k</sub> < ref.concrete |
| Modulus of elasticity 28 days                                                               | EN 13412   | GPa                                    | R4 | > 20                                | > 20                          |
| Capillary absorption                                                                        | EN 13057   | kg/(m <sup>2</sup> .h <sup>0,5</sup> ) | R4 | < 0,5                               | < 0,5                         |
| Adhesion after thermal compatibility - 50 cycles. Thermal cycling with de-icing salt impact | EN 13057   | MPa                                    | R4 | > 2                                 | > 2                           |
| Blocked shrinkage and expansion                                                             | EN 12617-4 | MPa                                    | R4 | > 2                                 | > 2                           |
| Reaction to fire                                                                            |            | class                                  | R4 | A1                                  | A1                            |

## SYSTEM DATA

### System composition

| BETONPROTEKT K2                        | KEMACRYL, KEMALATEX                                      | BETONPROTEKT RT                                          | BETONPROTEKT RP                                | BETONPROTEKT F                                                        |
|----------------------------------------|----------------------------------------------------------|----------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------|
| Rebar protection and the bonding layer | Polymer dispersion for the bonding bridge (bond old-new) | Repair mortar for vertical and ceiling concrete surfaces | Repair mortar for horizontal concrete surfaces | Fine levelling compound for corrosion protection of concrete surfaces |

Data for usage and consumption of products for concrete restoration and protection are given in technical data sheets.

## INSTRUCTIONS FOR USE

### Consumption

From 18 to 20 kg/m<sup>2</sup> for each cm of the layer

### Base

Surface has to be solid and clean, free of any kind of dirt, greasy spots and free particles.

### Base preparation

Weak bonded particles of concrete, carbonized and with chlorides contaminated concrete must be removed to achieve sound concrete with sandblasting, washing with water under high pressure, using a wire brush or light hammer. Concrete should be removed in some bigger range than damage reinforcing is visible. Rusty reinforcing rods should be cleaned to the shine grade St2 and protected with two coats of cement-based steel reinforcement primer and Bonding Bridge BETONPROTEKT K2. When reinforcing rods are rusted more than 30%, they should be replaced with new ones. Damaged concrete behind reinforcing rods should be completely removed in depth approx. 2 cm. If necessary concrete is additional reinforcing.

#### Bonding bridge:

On a well prepared and roughened substrate a bonding primer is generally not required. When a bonding primer is not required pre-wet the surface. The surface should not be allowed to dry before application of the concrete repair mortar. The surface should achieve a dark matt appearance without glistening and surface pores and pits should not contain water.

When a bonding primer/bridge is necessary apply polymer dispersion KEMACRYL or KEMALATEX, diluted with water 1:1 or BETONPROTEKT K2 – cementitious based steel reinforcement primer and bonding bridge. Repair mortar should always be applied "wet on wet".

### Mix ratio

app. 3,8-4,3 l of water per 25 kg of dry mixture

### Mix time

Mix dry mixture with clean water into a homogenous mass of putty-like consistency without clods. The final consistency is determinate in accordance with surface where mortar will be applied with adding some water (max. 0,5 l). Mix only the amounts of BETONPROTEKT RT that can be applied in 45 minutes. Water must not be added to the mortar that is already in the binding phase.

### Mix tool

Mix mortar in a clean container using suitable electrical mixer. Revolutions in a minute appoint on minimum.

### Installation

If a bonding primer has been used apply repair mortar "wet on wet". The repair mortar shall be worked into the prepared pre-wetted substrate between the minimum and maximum layer thicknesses (5-40 mm) and shall be compacted without inclusion of entrapped air pockets using a trowel. Where layers are to be built up to prevent sagging or slumping, each layer should be allowed to stiffen before applying subsequent layers "wet on wet". When layers cannot be applied "wet on wet", or if more than 24 hours between layers apply a bonding primer of KEMACRYL or KEMALATEX, diluted with water 1:1 or BETONPROTEKT K2 and apply repair mortar "wet on wet".

### Tool

Choose a trowel.

### Cleaning of tool

Clean tools immediately after the use before adhesive hardens. Hardened material on tools can only be removed mechanically.

### Usage time

app. 45 minutes

## LIMITATIONS

### Base temperature

+5°C min./ +30°C max.

Air temperature +5°C min./ +30°C max.

Material temperature +5°C min./ +30°C max.

#### Warnings

- Times specified in the technical sheet were measured at the temperature of +23°C and relative air humidity of 50%. With higher temperatures prescribed time can be shortened while prolonged at lower temperatures.
- Use only recommended amount of water. Use only mixture from undamaged packaging. Do not overdo the layer thickness.
- Protect freshly installed material from freezing, rain and other weather conditions. The material should not be used at (surface, air, material) temperatures lower than +5°C.
- Avoid application in direct sun and/or strong wind and/or rain.
- Apply only to sound, prepared substrates.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- It is essential to cure the repair mortar immediately after application for a minimum of 3 days to ensure full cement hydration and to minimise cracking. Use polythene sheeting taped down at the edges or apply an antievaporation compound KEMACURE EKO.

**Recommendation:** Remains of the unhardened/unset material have to be removed in accordance with the legislation.

**Data source:** All technical data in this technical sheet was obtained by laboratory research. Actual data may differ due to different working conditions.

**Local restrictions:** Due to specific local regulations the installed product can differ from country to country. For exact instructions for use a country specific technical sheet should be obtained.

#### SAFETY DATA

Irritating. Contains cement. Irritating to eyes, skin and respiratory tract. Contact with skin may cause hypersensitivity. In case of eye contact wash thoroughly with water at once and consult a doctor. In case of skin contact flood with a lot of water. Keep away from the reach of children. More data on storage, handling and use of mixture can be found in the safety sheet which contains safety, toxicological and ecological data. Warnings on the original packaging should also be considered.

#### LEGAL BASE

Information and recommendations related to use of KEMA products are presented in good faith and believed to be correct. The later is based on our knowledge and experience with the products. Information is supplied upon the condition that products are stored and used according to the recommendations and the persons receiving the same will make their own determination as to its suitability for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to Information or the product to which information refers. In no event will KEMA be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information or the product to which Information refers. Nothing contained herein is to be construed as a recommendation to the use any product, process, equipment or formulation in conflict with any patent, and KEMA makes no representation or warranty, expressed or implied that the use thereof will not infringe any patent. All orders fall under current sales and supply conditions. The user should always check the latest technical sheet available upon demand.