Betofix R4 SR
Fibre-reinforced PCC/SPCC for the static repair of concrete structures

**Availability**

<table>
<thead>
<tr>
<th>Availability</th>
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</thead>
<tbody>
<tr>
<td>Quantity per pallet</td>
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<tr>
<td>Packaging unit</td>
</tr>
<tr>
<td>Type of container</td>
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<tr>
<td>Container code</td>
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<tr>
<td>Art. no.</td>
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</table>

**Application rate**

Approx. 2.0 kg/m²/mm of layer thickness or approx. 2.0 kg/dm³

**Range of use**

- Concrete structures in areas under high chemical loads (up to and including exposure class XA 3)
- Repairing concrete structures with rough surfaces in areas subjected to static and dynamic loads
- In sewage systems exposed to high level of chemical attack, such as settling tanks, sludge thickeners and intakes
- In drinking water systems, meets the requirements in accordance with the work sheets W 270, W 300 and W 347 of the German Technical and Scientific Association for Gas and Water (DVGW)
- Supporting walls, facades, slabs and balconies
- Underneath carriageway surfacing on bridges and multi-storey car parks
- Inside and outside old and new buildings and in the wet areas of these buildings

**Property profile**

- Combines corrosion protection, a bonding layer and coarse and fine mortar
- Certified in accordance with DIN EN 1504-3
- Can be sprayed and applied by hand
- High sulphate resistance and low active alkali content (SR/NA)
- Single-layered application thickness in cracks up to 80 mm
- Resistant to frost and de-icing salt

**Characteristic data of the product**
The values stated represent typical characteristic data of the product and are not to be understood as binding product specifications.

### Water requirement
approx. 10.7%, equivalent to 2.7 l/25 kg

### Shrinkage (28 days)
≤ 0.55 mm/m

### Exposure class assignment
- Carbonation XC1 XC2 XC3 XC4
- Chlorides without sea water XD1 XD2 XD3
- Chlorides from sea water XS1 XS2 XS3
- Frost attack with/without de-icing agent XF1 XF2 XF3 XF4
- Chemical attack XA1 XA2 XA3
- Wear load XM1 XM2

### Flexural tensile strength (28 days)
≥ 8.0 N/mm²

### Reaction to fire
Class A1

### Compressive strength
- after 1 day: ≥ 15 N/mm², 7 days ≥ 40 N/mm², 28 days ≥ 50 N/mm² (Class R4 in accordance with EN 1504-3)

### Dynamic E-modulus
≥ 25,000 N/mm²

### Moisture class assignment
WO, WF, WA, WS

### External surveillance
QDB

### Maximum grain size
2 mm

### Adhesion capacity (DIN EN 1542) (28 days)
≥ 2.0 N/mm²

### Capillary water uptake
≤ 0.5 kg/(m²•h⁰.⁵)

### Colour
grey

The values stated represent typical characteristic data of the product and are not to be understood as binding product specifications.

### Certificates
- Prüfzeugnis W-261820-15, DVGW Arbeitsblatt W 270, Hyg. Institut Gelsenkirchen
- Prüfzeugnis K-258844-15, DVGW Arbeitsblatt W 347, Hyg. Institut Gelsenkirchen
- Analysenbericht P-2010/0173/A13/0589, DVGW Arbeitsblatt W 300, vdz Düsseldorf
- Prüfbericht Nr. 14/3613/01, Schleifverschleiß n. DIN 52108, KIWA MPA Bautest Berlin

### Possible system products
- Betofix KHB (1087)

### Preparation
- **Substrate requirements**
  Clean, dust-free and capable of supporting a load

- **Substrate preparation**
  Expose all steel parts, derust to a degree of purity of SA 2½
  Pre-wet the substrate so that it is matt-damp
  Expose the grains close to the surface
  The substrate must have an average pull-off strength of at least 1.5 N/mm²

### Production of the mixture
- **Mixing**
  Pour water into a clean container and add dry mortar.
  Mix thoroughly with a mixer for approx. 3 minutes until homogeneous.
  Allow to mature for approx. 1 minute.
  Then mix again for at least 1 minute until the proper consistency for working has been achieved.
  Add a little water if necessary.
If working with a continuous mixer, the relevant parameters must be determined on site.

**Directions**

**Conditions for use**
Temperature of the material, air and substrate: from min. 5 °C to max. 30 °C. Low temperatures will extend the working and hardening times and high temperatures shorten them.

**Working time (+20 °C)**
Approx. 60 minutes

- **Manual working**
  Use the product to apply a scratch coat.
  Dilute the product slightly before applying the product to hard-to-reach places in the form of contact sludge.
  - Layer thickness, single-layered 5–25 mm
  - Layer thickness, double-layered < 50 mm, with the second layer applied while the first is still wet
  - Layer thickness, single-layered in cracks < 80 mm

- **Machine working**
  Layer thickness, multi-layered, with the next layer applied while the previous one is still wet < 50 mm

**Tips on use**
The pre-wet substrate must still be slightly absorbent.
If the concrete cover measures less than 10 mm after completing repair work, protect the concrete reinforcement against corrosion using Betofix KHB.
Once it has hardened, mortar must not be made workable again by adding either water or more wet mortar.
Protect wet mortar surfaces against frost, rain and drying out too quickly for at least 4 days.
Hairline/shrinkage cracks are safe and cannot give ground for a complaint as they do not impair the properties of the mortar.
Mixing by hand and the mixing of partial quantities are not permitted.

**Notes**
The mixing water must be of drinking water quality.
May contain traces of pyrite (iron sulphide).
Low chromate content in accordance with Directive 2003/53/EC.
The characteristic data of the product were calculated under laboratory conditions at 20°C and 65% relative humidity.

**Tools / Cleaning**
- **Mixer, trowel, smoothing trowel**
- **Appropriate machine technology**

Clean tools with water before mortar sets.

**Storage / Shelf life**
If stored dry in closed containers, the product will keep for approximately 9 months.

**Safety data / Regulations**
For further information on the safety aspects of transporting, storing and handling the product and on disposal and environmental matters, please see the current Safety Data Sheet.
Larger quantities of leftover product should be disposed of in the original containers in accordance with the applicable regulations. Completely empty, clean containers should be recycled. Do not dispose of together with household waste. Do not allow to enter the sewage system.

PCC mortar for static and non-static repair for concrete

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Compressive strength:</td>
<td>Class R4</td>
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<tr>
<td>Chloride ion content:</td>
<td>≤ 0.05 %</td>
</tr>
<tr>
<td>Adhesion capacity:</td>
<td>≥ 2.0 MPa</td>
</tr>
<tr>
<td>Restricted shrinkage/swelling:</td>
<td>≥ 2.0 MPa</td>
</tr>
<tr>
<td>Carbonation resistance:</td>
<td>Passed</td>
</tr>
<tr>
<td>E-modulus:</td>
<td>≥ 20 GPa</td>
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<tr>
<td>Thermal compatibility Part 1 and 4:</td>
<td>≥ 2.0 MPa</td>
</tr>
<tr>
<td>Capillary water uptake:</td>
<td>≤ 0.5 kg/(m²·h0.5)</td>
</tr>
<tr>
<td>Reaction to fire:</td>
<td>Class A1</td>
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Please note that the data and information given above have been calculated as guidelines in the laboratory and from real-life experience and are therefore not binding as a basic principle. This information is therefore of a general nature only and describes our products and how they are used and worked with. In this respect, it must be borne in mind that the varied and diverse nature of the prevailing working conditions, materials used and construction sites encountered means that not every individual case can be covered. In this respect, we therefore recommend either conducting tests or liaising with us in the event of any doubt. Unless we have provided express written assurance of the products’ specific suitability or characteristics in respect of a contractually stipulated intended use, any technical application-related advice or instruction will never be binding, even though it is provided to the best of our knowledge. In all other respects, our general terms and conditions of sale and delivery shall apply.

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