

## Betonfix CR

ST11-0221

*Pourable cement mortar for structural repair and consolidation works*



### DESCRIPTION

**Betonfix CR** is a anti-shrinkage fibre-reinforced mortar with controlled expansion, with a pourable consistency and high mechanical resistance properties for both short and long curing, enriched with corrosion inhibitors. **Betonfix CR** is CE marked as R4 mortar according to the requirements of EN 1504-3 (structural and non-structural repair).

### ADVANTAGES

- Final mechanical development required for R4 mortars within the first 7 days. With corrosion inhibitors, no metallic particles or chlorides. No cracking risk.
- Mixed with additives or lactic acid is used for applications with specific requirements. Available in variants with different kinds of fibers.
- Durability and resistance to environmental stress evidenced by works from the beginning of the 80s.
- High protection of reinforcement rods: guaranteed by the carbonation resistance and by the low permeability to chloride ions
- Excellent workability and easy application (manual or mechanized).

### USES





**Betonfix CR** is used to create collaborative concrete castings, to fill rigid structural joints with thicknesses of over 5 cm, for repair in high thicknesses of deteriorated reinforced concrete structures, floorings, ceilings, slabs and road and railway beds.

For thicknesses greater than 10 cm, mix **Betonfix CR** with about 30% of siliceous inert washed and free of impurities, with particle size not lower than 6 mm and with a maximum diameter according to the thickness of casting.

### WORKS

- Renovation and reinforcement of reinforced concrete structures with collaborative castings ([SA56](#))

### APPLICATION

	Pourable		Curing time normal: 150 ± 30 mins
			Mixing water: 3,3-4,2 lt/ 25Kg variable according to the desired workability
	Max thickness per coat: 30-100 mm for horizontal application 30-100 mm for vertical application		

The product is ready-to-use on the addition of drinking water, according to the quantity shown in the table. The substrate to be treated must be perfectly clean, free from grease, oil and separating agents in general. Roughen the concrete surface with a bush-hammer. The superficial tensile strength of concrete "Pull off" must not be lower than 1,5 Mpa, as indicated in the procedures for the quality control of substrate according to EN 1504-10. If substrate has lower mechanical features, contact our Technical Department. Where metal reinforcements are visible, remove concrete and protect them with **Betonfix KIMIFER**, applied by brush.

Soak the area to be treated eliminating any pools of water when casting. Mix **Betonfix CR** for about 5 minutes with a cement-mixer adding 3/4 of the water required and then pour the product and the remaining water until you get the consistency required. The patch layers must have a proper reinforcement under pressure anchored to the existing structure with an embedded steel bar min 2 cm thick.

For thicknesses greater than 10 cm, mix **Betonfix CR** with about 30% of siliceous inert washed and free of impurities, with particle size not lower than 6 mm and with a maximum diameter according to the thickness of casting.

For particular applications, our Technical Department will provide further information.

### CONSUMPTION

2000 Kg/m<sup>3</sup>

## PACKAGING

25 kg multilayer polythene bag.

## STORAGE

Protect from humidity. Store the product in a dry, sheltered place. Stored in these conditions and in unopened containers, the product remains stable for 12 months.

Characteristics	Value
Appearance	Powder
Colour	Grey
Apparent specific weight UNI 9446	1,85 ± 0,1 g/cm <sup>3</sup>
Hazard classification 1999/45/CE e 67/548/CEE	Irritant
Maximum inert material size EN 1015-1	6 mm
Apparent volumetric mass of wet mortar UNI EN 1015-6	2250 ± 50 Kg/m <sup>3</sup>
Consistency UNI 7044/72	>200 %
Setting time (start) EN 196-3	150 ± 30 mins
Setting time (end) EN 196-3	240 ± 30 mins
Minimum application temperature	+5 °C
PH of mixture	12 ± 0,5
Stability EN 196-3	< 10 mm
Exudation UNI 8988	Absent
Reaction to fire class	A1
Permeability to chloride ions ASTM C1202 in 28 days	824 – Very low (100 – 1000 Coulombs)

Characteristics (mixing water 13%)	EN 1504-3 limits for R4 mortars	Typical value
Compression strength 28 days UNI EN 12190 [MPa]	≥ 45	In 1 d > 45 In 7 dd > 60 In 28 dd > 85
Flexural tensile strength at 28 days EN 196/1 [MPa]	Not demanded	In 1 d > 5 In 7 dd > 7 In 28 dd > 9
Secant compression elastic modulus EN 13412 [GPa]	≥ 20	27
Chloride content EN 1015-17 [%]	≤ 0,05	≤ 0,05
Concrete Adhesion (EN 1542) [MPa]	≥ 2	> 2
Thermal compatibility measured as adhesion (EN 1542) after 30 dry thermal cycles EN 13687-4 [MPa]	≥ 2	> 2
Thermal compatibility measured as adhesion (EN 1542) after 30 thundershower cycles EN 13687-2 [MPa]	≥ 2	> 2
Thermal compatibility measured as adhesion (EN 1542) after 50 freezethaw cycles with de-icing salts EN 13687-1 [MPa]	≥ 2	> 2
Resistance to accelerated carbonation, EN 13295	Depth of carbonation, dk < reference concrete type MC 0.45 a/c	Ok

Characteristics (mixing water 13%)	EN 1504-3 limits for R4 mortars	Typical value
Waterproofing (capillary absorption coefficient, EN 13057) [Kg/m <sup>2</sup> ·h <sup>1/2</sup> ]	≤ 0,05	< 0,5

## WARNING

Product for professional use.

The addition of more water than recommended will cause the components to separate and lead to the loss of the product's mechanical and chemical properties.

Do not remix the product by adding water once it has started to set: it will lose all its chemical and physical properties.

Do not add concrete, additives or other **Betonfix** mortars. Before using, check bags have not been damaged, and do not use the product if there are any lumps.

Use the entire contents once the bag has been opened.

Take all necessary precautions to ensure correct curing of castings. Do not use at temperatures below +5 °C.

Wet with water for the first 48 hours, or cover with plastic coverings or damp jute bags.

The marking obligations are not related to the intrinsic nature of a given product, but to the use to which a specific material is intended: before making the order in Kimia, the buyer shall submit all the documentation available to the works supervision in order to determine the materials suitability (in terms of certifications and performance) in relation to the use for which they are intended.

For further information and advice on safe handling, storage and disposal of chemical products, the user must refer to the most recent Safety Data Sheet, containing physical, ecological, toxicological and other data related to safety.

All technical data shown in this Technical Data Sheet are based on laboratory tests. Actual measurement data may vary due to circumstances beyond our control.

The information and requirements indicated in this Technical Data Sheet are based on our current knowledge and experience and are to be considered, in any case, purely indicative. They cannot guarantee the final result of the applied product and they have to be confirmed by exhaustive practical applications; therefore the user must test the suitability of the product for the intended application and its purpose. Users must always refer to the latest version of the local technical data sheet related to the product.

## TECHNICAL SPECIFICATIONS

### **SK56 - Renovation and reinforcement of reinforced concrete structures with collaborative castings**

Reinforcement of reinforced concrete structures with collaborative castings to be carried out before: removal of the damaged concrete until you see a compact substrate (the metal reinforcements exposed must be completely free of concrete in contact with them); sandblasting or hydro-sandblasting of concrete and metal reinforcement; wet the area to be treated and remove, at the time of casting, any stagnation of water. Treat the rods with Betonfix KIMIFER mortar by Kimia S.p.A. or similar product. Once the formworks have been positioned, use Betonfix CR mortar by Kimia S.p.A. or a similar product for the collaborative casting. The fillings must have a suitable contrast reinforcement anchored to the existing structure with a minimum cover of 2 cm. For thicknesses greater than 10 cm, mix Betonfix CR with approximately 30% of washed inert material, free of impurities, with minimum particle size greater than 6 mm and maximum diameter depending on the thickness of the casting. The pourable concrete for structural interventions will be prepared and applied scrupulously following the indications reported on the technical data sheets provided by the manufacturer and will have the following characteristics:

- Compressive strength UNI EN 12190 in 1 day > 45 MPa; in 7 days > 60 MPa; in 28 days > 85 MPa.
- Flexural strength UNI EN 196/1 in 1 day > 5 MPa; in 7 days > 7 MPa; in 28 days > 9 MPa.
- Secant compressive modulus UNI 6556: 27 Gpa;
- Adhesion on reinforced concrete EN 1542: > 2 Mpa.

The mortar will be CE marked as R4 according to EN 1504-3. The manufacturer will be able to provide specific reports related to the initial type tests carried out in notified laboratories for the most relevant data (adhesion, resistance to carbonation, elastic modulus, chloride content and permeability to chloride ions). In addition to the certifications on the single material, the manufacturer will be able to show the solidity of its know-how in the field of restoration of structures in r.c. throughout tests on the durability its solutions.