



# Betonfix FB

ST12-0324

*Thixotropic anti-shrinkage fibre-reinforced cement mortar.  
Normal curing, suitable for cortical repair of concrete.*



## DESCRIPTION

**Betonfix FB** is a ready-to-use, non-shrink hydraulic mortar with a thixotropic effect, added with PAN fibres and corrosion inhibitors.

A thixotropic mortar with high mechanical resistance for both short and long curing and excellent durability properties even in aggressive conditions (marine areas, antifreeze salts, acid rain).

The product does not contain metal particles and is chloride-free.

It is CE marked as structural mortar R4 according to the EN 1504-3 and it is compliant to the UNI 8147 standard.

## ADVANTAGES

- Final mechanical development required for R4 mortars within the first 7 days; no cracking risk.
- Versatile: mixed with additives or lactic acid is used for applications with specific requirements; available in variants with different kinds of grain and fiber.
- Durability and resistance to environmental stress evidenced by works from the beginning of the 80s.
- Excellent workability and easy application (manual or mechanized).

## USES

It is used for structural consolidation of deteriorated reinforced concrete structures (pillars, beams, cornices, balcony risers, bridges and road and rail viaducts, canals, dams, tunnels).

Its mechanical properties, elastic modulus and high resistance to sulphates make **Betonfix FB** ideal to consolidate masonry structures of natural stone or bricks.

## WORKS

- Cortical restoration and protection of degraded reinforced concrete structures with exposed metal reinforcement (**SA65**)

## APPLICATION

	Manual Application		Curing time normal: 150 ± 30 mins
	Mechanical devices application		Mixing water: 4-4,8 lt/ 25Kg Variable according to the desired workability
	Max thickness per coat: 15-30 mm for horizontal application 15-30 mm for vertical application 15-20 mm for overhead application		

The substrate must be perfectly clean, compact, free from dust, grease, paint, etc. Carefully remove the deteriorated and flaky concrete using a hammer until the substrate is compact.

The superficial tensile strength of "pull off" concrete must not be lower than 1,5 Mpa, as per procedure of quality control of substrate, according to EN 1504-10. If substrate has lower mechanical properties please contact our Technical Department.

Where metal reinforcements are visible, remove any adjoining concrete with a needle gun, hydrosand the entire surface and protect the metal reinforcements with **Betonfix KIMIFER**, applied by brush. Soak the area to be treated eliminating any pools of water when casting. Soak the area to be treated, taking care to remove, when casting, any pools of water.

Mixing must be carried out in a cement mixer or in the mixer of the spraying machine for at least 5 minutes until you get a proper plastic, homogeneous, lump-free mixture. A mortar mixer or a drill equipped with an agitator can be used, it depends on the quantity to be prepared. Mixing must take place at low speed to avoid entrapping air.

Introduce 3/4 of water required and continuously both product and remaining water until you get the consistency desired.

Apply with a trowel or spray with suitable plastering.

It is advisable to perform a bush-hammer based treatment

on the whole area in order to achieve the correct roughness, then place, if needed, a suitable electro-welded galvanized metal mesh to ensure a higher stability of the intervention, and apply the mortar in order to create a coverage of the steel reinforcement bars with at least 2 cm thickness.

When applied in several layers (higher than 3 cm), between a coat and the other run the levelling, improve the roughness with a notched trowel and wet the surface before applying the next layer. Wait at least 12 hours before laying the next coat.

The maximum applicable thicknesses per coat vary for different types of applications, contact Technical Department. In the case of continuous restorations in thick layers, to optimize times and costs of intervention, think about the use of **Betonfix CR** (pourable) using suitable formworks.

The setting values related to mechanized application are the following:

- machine type model PFT G5,
- with lung type D7,
- pipe parameters:
  - diameter d=30mm,
  - length L=30m

#### CONSUMPTION

18 Kg/m<sup>2</sup>/cm.

#### 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
Apperance	Powder
Colour	Grey
Apparent specific weight UNI 9446	1,38 ± 0,1 g/cm <sup>3</sup>
Hazard classification 1999/45/CE e 67/548/CEE	Irritant
Maximum inert material size EN 1015-1	3 mm
Apparent volumetric mass of wet mortar EN 1015-6	2150 ± 30 Kg/m <sup>3</sup>
Consistency 7044/72	40-50 %
Setting time EN 196-3	150 ± 30 mins
Setting time EN 196-3	240 ± 30 mins
Minimum application temperature	+5 °C
pH of mixture	12 ± 0,5
Contrasted expansion UNI 8147	0,06 %
Dangerous substances	Compliant with DM 10/05/2004

Characteristics (mixing water 18%)	Limits EN 1504-3 for R4 mortars	Value
Compressive strength in 28 days EN 12190 [MPa]	≥ 45	In 1 d > 10 In 7 dd > 45 In 28 dd > 60
Flexural strength EN 196/1 [MPa]	No request	In 1 d > 4 In 7 dd > 9 In 28 dd > 10
Secant elastic modulus on compression [GPa] EN 13412	≥ 20	> 26
Chlorides 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 thunder- shower cycles EN 13687-2 [MPa]	≥ 2	> 2
Thermal compatibility measured as adhesion (EN 1542) after 50 freeze- thaw 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
Waterproofing (capillary absorption coefficient, EN 13057) [Kg/m <sup>2</sup> ·h <sup>1/2</sup> ]	≤ 0,05	< 0,25

#### WARNING

Product intended for professional use.

Different supplies of the same raw materials have slightly discordant colors since different lots of production may have a little shade variation. This does not affect in any way the technical performance of the products supplied.

Do not remix by adding water to the product when it has already started to set.

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 content if the bag has been opened.

Do not use at temperatures of under +5 °C.

Take all necessary precautions to ensure correct curing of the casting.

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

Do not use anti-evaporation agents in case other coatings are to be performed.

The Obligations of marking are not related to the intrinsic nature of a given product, but to the use to which a specific material is used: before making the order in Kimia, the buyer shall submit all the documentation available to the D.L. 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

### **SK65** - Cortical restoration and protection of degraded reinforced concrete structures with exposed metal reinforcement

Accurate removal of degraded and inconsistent concrete by hammering until a you see a compact substrate.

Remove concrete from metal reinforcements by means of a needle gun. Positioning of new collaborative metal reinforcement in case of noticeable oxidation of existing irons with a strong reduction of the section and grout with special epoxy resins.

Hydro-sandblasting or sandblasting of concrete and metal reinforcement. Wet the area to be treated and remove any stagnant water at the time of casting.

For the treatment of the rods, use Betonfix KIMIFER mortar by Kimia S.p.A. or similar product. The product will be applied by brush in a double coat with a total consumption of about 0.5 Kg/m<sup>2</sup>. The first coat will be spread on the metal reinforcement to be protected, the second coat will be applied, as an adhesive bridge, also on the concrete to be restored.

For the cortical restoration, use Betonfix FB mortar by Kimia S.p.A. or similar product. Apply with a trowel or spray with suitable plastering machines. Consumption: 18 kg/m<sup>2</sup> every cm of thickness.

The ready-to-use anti-shrinkage hydraulic mortar with a thixotropic effect containing synthetic fibers and corrosion inhibitors will be prepared and applied scrupulously following the indications given on the technical sheets supplied by the manufacturer and must have the following characteristics: • compressive strength EN 12190 at 1 days: > 10 MPa; at 7 days: > 45 MPa; at 28 days:> 60 MPa; • flexural strength EN 196/1 at 1 days > 4 MPa; at 7 days: > 5 MPa; at 28 days:> 8 MPa; • elastic secant modulus on compression EN 13412 [Gpa]: > 26; • Concrete adhesion (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 relating to the initial type tests performed at notified laboratories for the most relevant data (adhesion, carbonation resistance, elastic modulus and chloride content).

Kimicover BLINDO by Kimia S.p.A. will be used for any anti-carbonation protective coating. or similar product diluted with 10-15% of drinking water applied in a double coat by brush, roller or spray respecting a total consumption not lower than 0.5 kg/m<sup>2</sup>.