

MONNELI BETOCEM FIBRE

Fibre Reinforced Shrinkage Controlled Mortar for Concrete Repair

Product Description

A cement mortar composed of high resistance hydraulic binders, silica sand, selected aggregates, special additives and synthetic fibers. The ready to use blend is supplied in dry powder which requires the addition of clean water only to produce an easily workable mortar with thixotropic effect.

Uses

BETOCEM FIBRE is suitable for use on a wide range of concrete and masonry repairs. It can be applied on vertical, overhead or horizontal places without the use of formwork.

Typical applications would include:

- Repairs for edges of beams and pillars
- Risers of balconies & terraces
- Tunnels
- Degraded concrete castings
- Reconstruction of concrete structural elements - filling honeycombs in reinforced concrete, rigid joints filling, etc.

Advantages

- Excellent adhesion to the old concrete
- Good mechanical resistance both flexure and compression
- Shrinkage compensation - reduces the risk of cracking
- Excellent thixotropic behavior
- Low permeability, gives excellent resistance to attack by Sulphates and other aggressive elements
- 2 cm layer of the cured product is resistant against CO₂ diffusion in the same degree as 15 cm layer of concrete
- High thickness is achieved without formwork saving time and expense of multiple applications

Instructions for Use

Surface Preparation

Concrete preparation

The surface of the concrete to be repaired should be sound, clean and uncontaminated. The decayed or damaged area to be repaired should be marked. Cut the marked area to a depth of at least 10mm using a hand held concrete saw or disc grinder to avoid feather edging and to provide a square edge. Break out or chip the complete repair area down to sound base using sharp tools or chipping hammer.

Steel Preparation

Any corroded steel in the repair area must be fully exposed. All exposed reinforcement shall be cleaned of corrosion products by wet grit blasting or other approved means to achieve a clean and bright finish.

In case that reinforcing bars section is reduced due to oxidization, integrate them with additional bar reinforcement.

Priming

Steel Priming

The cleaned steel should be coated within 3 hours. Apply one coat of BETOFER, a corrosion proof cementitious based primer or EPOZINC, a two component Zinc rich EPOXY PRIMER, continuously with brush onto the cleaned bar reinforcement ensuring that the whole steel surface area is completely covered. Allow to dry before proceeding with the repair.

Concrete Priming

If the concrete deterioration is due to Chloride attack, it is recommended to use EPORIPRESA, an epoxy bonding agent. It will cure to form a barrier against Chloride ions.

However if the cause is Carbonation, dampen the surface with clean water (avoiding free standing water) and apply thin coat of AR LATEX RIPRESA, an acrylic bonding agent.

BETOCEM FIBRE must be applied before the bonding agent dries while it's still tacky to achieve a better bond between the fresh and cured section.

Mixing

For mixing process, a slow speed drill (200- 300rpm) fitted with a suitable paddle is recommended. Place 4.0-4.5 liters of cold clean water in the mixing bucket. With the drill in operation, add the entire content of the 25 kg bag of BETOCEM FIBRE while mixing continuously till a uniform lump free consistency mix is achieved. Powder must always be added to water.

Allow the obtained mix to stand for about 3 minutes and then remix before application. Under no circumstances should partial mixing be considered.

Application

Apply the product manually with a trowel or spatula with full compaction, to primed substrate while it is still tacky..

The minimum applicable coat thickness is 10 mm and the maximum thickness shall be 50 mm for vertical and 25 mm for overhead sections. For small horizontal sections thickness should be from 10mm up to 100 mm.

Application thickness is dependent on repair size and granulometry. High build applications can be achieved through temporary formwork.

If the application of the second coat is necessary the previous layer should be cross hatched and allowed to take up its initial set before applying the next coat.

Use trowel or sponge for the finishing touch.

Curing

The repaired area shall be cured in accordance with good concrete curing practice and protected from drying winds, sun or excessive heat. Curing shall be done with non- degradable curing compound BETOCURE AR. Alternatively; a wet hessian cloth covered with polyethylene sheet can also be employed. Curing should begin as soon as final finish is achieved.

In fast drying conditions, supplementary curing with polythene sheets must be used.

Cleaning

BETOCEM FIBRE should be removed from tools and equipment and mixers with clean water immediately after use. Cured material should be removed mechanically.

Equipment used for applying EPORIPRESA, the epoxy bonding agent should be cleaned with SOLVENTE 10.

Recommendations

- Do not apply the product at temperature less than +5°C.
- Do not add water once the mix has begun to set.
- BETOCEM FIBRE should not be exposed to running water either during application or prior to final set.
- Do not mix the bags partially.
- In warm weather, store the material in cool place. Make sure to use cool water to keep the mixed mortar temperature below 30°C.
- During summer season if temperature is up to +50°C, ensure that water used during mixing is less than 25°C.
- Application should not be under direct sunlight.

Yield

14.0 liters / 25 kg bag with 4.5 liters water addition.

Packaging

BETOCEM FIBRE is supplied in 25 kg bags.

Technical Data

Properties	Results
Appearance	Grey powder
Density at 25°C	2.1 kg/L
VOC	1.0 g/L
Granulometry	0-2.5 mm
Thickness per coat	10-50 mm vertical 10-25 mm overhead 10-100 small pockets & horizontal
Water impermeability (BS EN 12390 Pt 8)	<10 mm
Water absorption (BS 1881 Pt 122)	<2 %
Compressive strength At 7 days At 28 days (ASTM C 579)	34 N / mm ² >45 N / mm ²
Tensile strength at 28 days (BS 6319-7)	>3.5 N / mm ²
Flexural strength At 7 days At 28 days (ASTM C 580)	5 N / mm ² 7 N / mm ²
Adhesion to concrete at 28 days (BS 1881 Pt 207)	1.6 N / mm ²
Drying shrinkage At 7 days At 28 days (ASTM C157-93)	<300 microstrain <500 microstrain
Linear thermal Expansion (BS 6431-15)	1 x 10 ⁻⁶ µm
Workability at 25°C	>30 minutes
Application temperature	+5°C to +50°C

Test performed at 25°C, 50% of relative humidity and in absence of ventilation.

All values are subject to 5-10 % tolerance

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Storage

The product must be kept in dry and sheltered place, in these conditions its shelf life will be 12 months.

Health & Safety

BETOCEM FIBRE can be harmful to skin as it contains cement powders which may releases alkalis when mixed with water.

During application, wear appropriate protective clothing, goggles, gloves and respiratory equipment if necessary.

In case of contact with skin, rinse with water and again wash thoroughly with soap and water. In case of contact with eyes, rinse with plenty of water and seek medical advice accordingly. If ingested, obtain medical attention immediately. Do not induce vomiting.

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