

MONNELI BETOCEM MC

Flowable, Non-Shrink Micro-Concrete

Product Description

A single component, cement based flowable non-shrink micro-concrete. It is composed of Portland cement, graded aggregates and special additives. It is formulated to achieve a high flowability mix with minimal water content which ensures early strength gain and long durability.

Uses

BETOCEM MC is designed to repair structural damaged concrete. It can be used in small, as well as, large repairing areas. It is ideal to be used in the following cases:

- Replacing sections of concrete beams
- Structural repairs for columns
- Repair and fill deep honeycombed concrete
- Provide hard wearing repairs to concrete flooring

Can be applied in structural membrane where steel reinforcement is congested or access to this area is difficult during casting the concrete.

Advantages

- Low alkaline and chloride free product
- Economical product for mass concrete repairs
- Excellent adhesion to concrete substrates
- Compatible to all cementitious products
- Non-shrink, with early strength characteristics
- Can be poured manually or by pump
- One component product which makes it easy to mix and apply at site
- Hardened product exhibits high strength with low permeability
- Free flow mix which minimize the risk of honeycomb and eliminate the need for vibration process without any risk of segregation

Instructions for Use

Surface Preparation

Concrete preparation

The surface of the concrete to be repaired should be sound, clean and uncontaminated. The boundary of the repair area should be cut using a concrete saw to provide a neat edge to the repair with no feather edging and to provide a square edge. Repairs using BETOCEM MC should be generally at least 50 mm as a minimum depth with a maximum of 500 mm in single coat.

Oil and grease deposits should be removed by stiff brushing, detergent scrubbing with a heavy duty cleaner/degreaser or steam cleaning.

Prepare the formwork to be rigid and tight to prevent loss of material. The formwork should include drainage outlets for presoaking.

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 oxidation, 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 continuing.

BETOCEM MC 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

To prepare the mortar, it is recommended to have a forced-mixer of spiral paddle in a slow speed (300/400 rpm) heavy duty drill. It is essential that machine mixing capacity and labour availability is adequate to enable the placing operation on to be carried out continuously.

Add 3.0 – 3.5 liters of water in the mixing drum then add the full bag of BETOCEM MC and mix for at least 4 – 5 minutes till obtaining a fluid, uniform lump free consistency mix. Do not part mix the bags, nor use additional water than specified. Note that powder must always be added to clean cold water.

To obtain the full benefit of the fluidity provided, apply BETOCEM MC immediately after mixing.

Application

Cast the mortar into the formwork, allowing air to escape. It's advisable to spray the formwork by water prior to placing the mortar to avoid water absorption from the mix. 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.

Cleaning

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

Recommendations

- Do not apply the product at temperature less than +5°C.
- Do not add water once the mix has begun to set
- BETOCEM MC 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.

Technical Data

Properties	Results
Appearance	Grey powder
Wet density at 25°C	2.3 kg/L
VOC	2.0 g/L
Granulometry	10mm
Compressive strength at 7 days at 28 days (ASTM C579)	40 N / mm ² 60 N / mm ²
Flexural strength at 7 days (ASTM C580)	7.5 N / mm ²
Slant shear strength (ASTM C 882)	7.6 N /mm ²
Drying shrinkage at 28 days (ASTM C157-93)	< 500 microstrain
Coefficient of thermal expansion (BS 6431-15)	1 x 10 ⁻⁶ µm
Chloride ion penetration (ASTM C1202)	Low
Water absorption (BS 1881 Pt 122)	< 1.9%
Water penetration (BS EN 12391 Pt 8)	NIL
Setting time Initial Final	2.5 hours 4.5 hours
Workability at 25°C	>30 minutes

All values are subject to 5-10 % tolerance

Yield

12.5 liters / 25 kg bag with 3.5 liters water addition

Packaging

BETOCEM MC is packed in 25 Kg bags

Storage

Keep the product in dry covered place into original well closed packaging. In these conditions, the product will have a shelf life of 12 months from date of production.

Health & Safety

BETOCEM MC 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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