

Betocem Monolite 10

MINERAL MORTAR, EXTRA-RAPID SETTING (10 MINUTES), FIBRE-REINFORCED, COMPENSATED SHRINKAGE, FOR THE PASSIVATION, RESTORATION, SMOOTHING AND PROTECTION WITH DEGRADED CONCRETE STRUCTURES, DURABILITY GUARANTEE. SPECIFIC FOR RESTORATION WITH THE NEED FOR EXTRA-RAPID COMMISSIONING.



TECHNICAL DATA SHEET - REV. 01/2024

DESCRIPTION

BETOCEM MONOLITE 10 is an extra-rapid setting powder mortar with compensated shrinkage, consisting of specific high-strength hydraulic binders, siliceous aggregates, special additives and synthetic fibres. When mixed with water, it becomes a mortar with a thixotropic effect, which can be applied in thicknesses 2 to 40 mm per coat, even vertically without the risk of dripping and without the need for formwork. BETOCEM MONOLITE 10 does not require prior treatment of rebars, and is characterised by excellent adhesion on concrete substrates provided they have been previously wetted. Once hardened, BETOCEM MONOLITE 10 has high mechanical strength and high resistance to carbonation. In addition, it is characterised by water impermeability, elastic modulus, thermal expansion coefficient and water vapour permeability coefficient similar to high-quality concrete.

Complies with European Standard EN 1504-3 ("Non-structural structural repair") for class R4 structural mortars (PCC) according to the CR principle (concrete repair).

APPLICATION FIELDS

BETOCEM MONOLITE 10 is used for interventions requiring rapid commissioning, for passivation, restoration and levelling of degraded concrete works, both horizontally and vertically, such as beam and pillar edges, cornices, balcony fronts and parapets damaged due to oxidation of rebars, for reconstruction of the iron cover layer of reinforced concrete works, including structural ones. BETOCEM MONOLITE 10 is also suitable for the finishing regularisation of diaphragm walls or tunnels, for the regularisation of surface defects such as gravel nests or concrete casting joints. For thick fillings on large surfaces, the use of a collaborating metal reinforcement is recommended.

SUBSTRATE PREPARATION

The substrates must be perfectly clean, solid, free of dust and greasy substances and properly roughened. Remove all deteriorated or detached concrete by peening until the substrate is solid, consistent and rough. Previous restoration work, which is not perfectly consistent, must be removed. Thoroughly clean the concrete and rebars using mechanical means (hydro-blasting or brushing), until all oxidation on the bars, surface cement slurry and any other traces of dirt have been removed. In the event of a reduction in the section of the rebars, supplement them with additional rebars. Wet the area to be restored to saturation with water, eliminating any stagnation when work begins.

APPLICATION

To prepare the mixture, pour 4.5-5 litres of clean water per 25 kg bag of BETOCEM MONOLITE 10 into a container or concrete mixer and mix for a few minutes, taking care to remove the part of the powder that is not perfectly dispersed

from the sides and bottom of the container, until a homogeneous, lump-free mixture is obtained. Let it rest for a few minutes, remixing briefly before use. This mixture remains workable for about 10 minutes at a temperature of +23°C. BETOCEM MONOLITE 10 does not require prior treatment of rebars and can be applied directly onto the area to be restored. Apply BETOCEM MONOLITE 10 manually, with a trowel or spatula, to repair degraded concrete areas and to reconstruct deteriorated layers, even vertically without the need for formwork. However, the use of formwork can be useful to speed up horizontal applications, or for operations such as beam and column reconstruction. Perfect adhesion with the substrate is ensured by exerting good pressure and reworking the product with the trowel directly on the surface to be restored, wrapping rebars, until the desired thickness is reached. The minimum applicable thickness is approximately 2 mm and a maximum of 40 mm, depending on the application. As soon as the mortar starts to harden, finish with a sponge float or metal trowel, depending on the degree of finish required. The time required to perform this operation is greatly affected by weather conditions. In addition to BETOCEM MONOLITE 10, the complete restoration cycle also includes a decorative protection with MANTOCOLOR anti-carbonation elastomeric water paint.

YIELD

17 kg/m² per cm of thickness.

RECOMMENDATIONS

- ◆ Do not use BETOCEM MONOLITE 10 on smooth concrete substrates, but strongly roughen the surface to be restored.
- ◆ Never remix the product once the setting process has begun, as it would lose all its chemical and physical properties.
- ◆ Cure BETOCEM MONOLITE 10 carefully, avoiding, especially on hot or very windy days, rapid evaporation of the mix water that could cause small surface cracks due to plastic shrinkage.
- ◆ Keep the surface moist during the first 24 hours after application of the mortar by spraying it with water or covering it with waterproof sheets.
- ◆ Protect against rain, frost, or direct sunlight for the first 24 hours.
- ◆ Do not work in temperatures below +5°C or above +35°C.
- ◆ Wash all the equipment used for preparation and application of the product with water before it hardens. After setting, the mortar can only be removed mechanically.

PACKAGING

BETOCEM MONOLITE 10 is available in 25 kg polyethylene coated paper bags on 1500 kg pallets. Store the product in a dry place and in its original packaging, well closed. In these conditions its stability lasts at least 12 months.

SAFETY INSTRUCTIONS

The product contains cement that, in contact with body perspiration, produces an irritant alkaline and sensitising reaction for the skin. Use suitable clothing, gloves and protective glasses. Refer to the respective Safety Data Sheet for more information about how to use the product safely.

SPECIFICATIONS

Passivation, structural restoration of degraded concrete works and protective skim coat by applying thixotropic, extra quick-setting, fibre-reinforced, compensated-shrinkage mineral mortar composed of high-strength hydraulic binders, siliceous aggregates, special additives and synthetic fibres, such as **BETOCEM MONOLITE 10** by COLMEF Srl. The product shall meet the minimum requirements of EN 1504-3 for class R4 structural mortars.

The substrates must be clean, solid and compact, suitably roughened after the removal of loose parts, to be calculated separately. The product must be applied to the substrate wet to saturation, with a trowel in thicknesses of between 2 and 40 mm, respecting a consumption of approximately 17 kg/m² per cm of thickness, then a protective skim coat must be made with the same **BETOCEM MONOLITE 10**, to be applied with a metal trowel and finished with a sponge float depending on the degree of finish required.

TECHNICAL DATA

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|----------------------------------|---|
| Compliant with Standard: | EN 1504-3 |
| Class: | R4 |
| Typology: | PCC |
| Appearance: | powder |
| Colour: | grey |
| Particle size (mm): | 0-0.4 |
| Mixing ratio: | 4.5-5 litres of water for 25 kg of powder |
| Mixture colour: | grey |
| Mixture consistency: | thixotropic |
| pH value: | ≥ 12 |
| Setting start/end time: | 10-15 min. |
| Allowed application temperature: | from +5 °C to +35 °C |

FINAL PERFORMANCE according to EN 1504-3 Class R4-PCC

| | Requirements | Results | Test method |
|---|--|---|--------------------|
| Compressive strength (MPa): after 3 h: after 24 h: after 7 days: after 28 days: | ≥ 45 (after 28 days) | > 6,90 > 32,57 > 32,64 > 51,10 | EN 12190 |
| Flexural strength (MPa): after 3 h: after 24 h: after 7 days: after 28 days: | not required | > 2,43 > 4,95 > 6,97 > 7,38 | EN 12190 |
| Chloride ion content (%): | ≤ 0.05 | < 0,009 | EN 1015-17 |
| Direct Tensile Adhesion (MPa): | ≥ 2.0 | > 2.0 | EN 1542 |
| Resistance to carbonation: | $d_k \leq \text{control cls [MC(0.45)]}$ | Pass | EN 13295 |
| Elastic modulus in compression (GPa): | ≥ 20 | > 20,1 | EN 13412 |
| Thermal compatibility measured as adhesion according to EN 1542 - Bond strength after 50 cycles (MPa): - freeze-thaw cycles: - storm cycles: - dry thermal cycles: | ≥ 2.0 ≥ 2.0 ≥ 2.0 | > 2.0 > 2.0 > 2.0 | EN 13687-1 |
| Capillary absorption ($\text{kg/m}^2 \cdot \text{h}^{0.5}$): | ≤ 0.5 | < 0,15 | EN 13057 |
| Reaction to fire: | Euroclass | Class A1 | EN 13501-1 |

DATA COLLECTION AT +23 °C - R.H. 50% AND NO VENTILATION

The above information and prescriptions are based on our best experience. However, we cannot accept any liability for the possible misuse of the products. We therefore advise those who intend to use them to assess whether or not they are suitable for the intended use and to carry out preliminary tests in any case. Always refer to the latest version of the technical data sheet, available at www.colmef.com.

FOR MORE INFORMATION OR PARTICULAR USES, PLEASE CONSULT THE COLMEF TECHNICAL SUPPORT SERVICE.

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