MonniRep HR

High Resistant Mortar for Degraded Concrete Structural Repair

Product Description

MonniRep HR is a cement mortar composed of high resistance hydraulic binders, silica sand, selected aggregates, special additives and synthetic fiber. 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, fit to be applied vertically in a large thickness.

Uses

MonniRep HR is suitable for a wide range of concrete and masonry repairs, and it is used for structural repair of the following:

- Degraded reinforced concrete
- Edges of beams and pillars
- Risers of balconies
- Terraces
- Parapets
- Bridges and Channels
- Viaducts, dams and tunnels

Its particular composition allows getting mortar with elevated mechanical resistance against flexure and compression, even after a short curing time.

Advantages

- Excellent adhesion to the old concrete
- Good resistance against Sulphates and damp permeability
- High mechanical resistance both flexure and compression and medium elastic module
- Shrinkage compensating
- Excellent thixotropic behavior, especially suitable for overhead and vertical application
- The 2 cm layer of the hardened product is resistant against CO2 diffusion in some degree as the 20 cm layer of concrete
- High build achievable without formwork – saves time and expense of multiple applications
- Excellent workability

Usage Instructions

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 with a marker. 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.

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

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.

Steel Priming

The cleaned steel should be coated within 3 hours. Apply one coat of MonniRep CS, a corrosion proof cementitious based primer or MonniZinc, 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.

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Concrete Priming

If the concrete deterioration is due to Chloride attack, it is recommended to use MonniBond E50, 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

MonniLatex ACR an Acrylic bonding agent.

MonniRep HR 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 MonniRep HR 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 10mm and the maximum shall be 35mm for vertical and 25mm for overhead sections. For small horizontal sections, the applicable thickness shall be from 10mm up to 100mm 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 MonniCure 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

MonniRep HR 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 MonniBond E50, the epoxy bonding agent should be cleaned with Monneli Solvent 10.

Technical Data

Category	Typical Values
Appearance	Grey Powder
Wet Density	2.15 Kg/L @ 25^{o}C
VOC	4.9 g/L
Thickness per Coat: Vertical: Overhead: Small Pockets & Horizontal:	 10-35 mm 10-25 mm 10-100 mm
Compressive Strength (ASTM C579)	≥ 42 N/mm^2@ 7 days ≥ 50 N/mm^2@ 28 days
Flexural Strength (ASTM C580)	≥ 5 N/mm^2@ 7 days ≥ 7.5 N/mm^2@ 28 days
Adhesion to concrete (BS 1881 Pt 207)	1.8 N/mm^2
Drying Shrinkage (ASTM C157-93)	<500 micro strain @ 28 days
Workability	> 30 minutes @ 25^{o}C
Application Temperature	+5^{o}C to +35^{o}C

All values are subject to 5-10% tolerance

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Yield

14.0 liters / 25 kg bag with 4.5 liters water addition

Packaging

BETOCEM HR is supplied in 25 kg bags

Shelf Life & Storage

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

Recommendations

- Do not apply the product at a temperature less than +5°C
- During the peak temperature of the day in the summer season, working area should be covered if work to be executed externally. Use Cold water to mix the product.
- In warm weather, store the material in cool place.
- Make sure to use cool water to keep the mixed mortar temperature below 30 °C.

Health & Safety

MonniRep HR can be harmful to skin as it contains cement powders which may release 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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