

Description

Rendercem® FR is a fibre re-inforced polyacrylonitrile fibre rheoplastic mortar for structural repairs with compensated shrinkage and with normal setting time. It is ready to use cement based product that after mixing with water is applicable by spray or trowel. The product when hardened will have excellent adhesion, durability, waterproofing properties and exceptional mechanical strength. Rendercem® FR does not contain any expansive metallic elements.

Features & Benefits

- The thixotropic features of this results in excellent adhesion, making it easy to spread on vertical surfaces beneath beams, shelves and on ceilings etc.
- Enhanced durability - The hardened material will have an extremely low permeability thus enhanced durability.
- User friendly - Specifically developed as a single component easy-to-apply product, with trowellable consistency.
- Compatibility - Aligns performance closer to that of host concrete.
- Crack resistant as it contains fibers.

Primary Application

Rendercem® FR is suitable for hand application for repairs where impermeable, crack free repairs are required. Applications would include, but not be limited to the vertical and overhead repairs to restore cover concrete up to 75mm thick.

Technical properties

Water/powder ratio	0.16 - 0.17
Fresh wet density	2.15 to 2.22 g/cc
Compressive Strength @24hrs @3 days @28 days	16MPa 28MPa 40MPa
Flexural Strength @24hrs @3 days @28 days	5MPa 6.5MPa 8.5MPa
Adhesion Bond Strength @3 days @28 days	2.5MPa 3.5MPa
Young's Modulus (Dynamic) (Static)	26.5GPa 21.5GPa
Pullout Resistance For smooth steel For ribbed steel	>4MPa >10MPa
Permeability	<5mm
Drying Shrinkage	<500micro strains @28 days
Rapid Chloride Permeability	<500coulombs

Design Criteria

The repair mortar product shall have a formulation based on dimensional stability technology. Compatibility of repair mortar systems with the host concrete and the control of shrinkage in particular is essential.

Recommended limits per layer for a single application are:

Minimum applied thickness - 10mm

Overhead sections : Up to 20mm thick

Vertical sections : Up to 40mm thick

Small pockets or horizontal : Up to 75mm thick

Maximum area for continuous application: 2m x 2m

Specification Clause

The reinstatement mortar for spalled cover concrete shall be pre-batched, pre-packed polymer modified fiber reinforced cementitious, structural grade repair mortar Rendercem FR which can be applied by trowel to the required thickness at single/multiple layers as per manufacturers specification.

Application Instructions

Surface Preparation

Any corroded steel shall be fully exposed and all loose scale and corrosion deposits shall be removed. Steel should be cleaned to a bright condition paying particular attention to the back of exposed steel bars. Grit-blasting is recommended for this process. Where corrosion has occurred due to the presence of chlorides, the steel should be high-pressure washed with clean water immediately after grit-blasting to remove corrosion products from pits and imperfections within its surface. Talrakote® ZE should be applied to the cleaned area before patch-up.

Mixing

Add 4.00 to 4.25 liters of clean water to 25kg of dry mix powder (1bag). Mix for 3-5 minutes (or depending on the mixing efficiency for the time necessary to achieve a smooth and lump free mix) in the cement mixer. The water powder ratio shall not exceed 0.17. Hand mixing is not recommended.

Application

The mixed material is applied to cover all the exposed reinforcement or fill the entire void. The applied material shall be finished smooth with a trowel. Once applied and as soon as the layer has set, keep the surface of the mortar damp or at least prevent evaporation of the water for at least 24 hours. This is especially most important in hot dry and windy areas. In the case that additional re-inforcement is used, it is essential that the product is also applied in the shadow side of the re-bars in order to avoid hollow areas. In case of spraying, spray always in an angle to the substrate to fill all the voids. The applied material shall be finished smooth with a trowel.

In case of vertical layers or applications at higher thickness, develop the desired thickness in multiple layers before the previous layer attains full cure. It is advised to scratch the surface with a sharp tool to create deep lines that will act as a mechanical key to the subsequent layer. No bonding agent is required if wet - on-wet layers are built up. However, if the bottom layer is already hardened Talrakpolybond® SB is applied between the layers in order to avoid stresses in the plastic phase. Curing is recommended.

Estimating Packaging

Rendercem® FR is supplied in 25kg bag.

Yield

One bag of 25kg Rendercem® FR will yield 13.0 to 13.5liters of mixed material. This yield is theoretical and the actual yield will depend on the consistency used.

Storage

Rendercem® FR has a shelf life of 6 months if kept in dry store in original, unopened containers. If stored at high temperature and/or high humidity conditions the shelf life may be reduced.

Precautions

Health & Safety Instructions

Contact with the skin should be avoided. In cases of contact with the skin, should be washed immediately with soap and water-not solvent. Gloves and goggles should be used when handling these products. Eye contamination must be immediately washed with plenty of water and medical treatment sought.



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