Fosroc® Renderoc FC

constructive solutions

Single component polymer modified cementitious fairing coat conforming to the requirements of BS EN 1504-3 Class R2

Uses

Renderoc FC is designed for application in thin layers to produce a fair-faced appearance to concrete surfaces or masonry surfaces in readiness to receive a protective/ decorative coating. Surface imperfections up to 3 mm in depth can be filled with the scrape-coat application. Voids of greater depth should be separately filled as a prior operation, again limiting the material thickness to 3 mm. Alternatively, consideration should be given to the use of Renderoc RP252 reprofiling and protection mortar. Where higher compressive strengths and low permeability characteristics are required, Renderoc RP 252 or Renderoc ST05 should be used.

Renderoc FC can also be used in association with other Renderoc mortars.

Renderoc FC is suitable for repair method 3.1 as defined by BS EN 1504-3.

Advantages

- Compatibility with structural and non-structural concrete of compressive strength 20 - 45 MPa
- Polymer-modification provides extremely low permeability to water, carbon dioxide and chlorides
- Excellent bond to concrete
- Can be applied quickly and efficiently
- One component, pre-bagged to overcome site-batched variations
- Contains no chloride admixtures

Description

Renderoc FC is designed for vertical and overhead use to infill honeycombing and voids up to 3 mm deep in the surface of concrete which is not trafficked and is subsequently coated.

Renderoc FC is supplied as a ready to use blend of dry powders requiring only the site addition of clean water to produce a highly consistent cementitious fairing mortar. The material is based on a blend of cements, graded aggregates, special fillers and chemical additives to provide a material with good handling characteristics, while minimising water demand.

The product exhibits excellent thermal compatibility with concrete and is fully compatible with other Renderoc mortars and Dekguard coatings.

Specification Clause

The fairing coat shall be Renderoc FC, a one component polymer modified mortar for application thicknesses of between 0mm and 3mm, conforming to the requirements of BS EN 1504- 3 Class R2. It shall be capable of use without independent priming and curing systems and shall be

manufactured to produce a uniform, fair faced finish to concrete or masonry in preparation for application of a protective coating. The product shall be mixed, applied and cured in accordance with the manufacturer's written instructions to a correctly prepared substrate.

Standards compliance

Renderoc FC complies with the class R2 according to BS EN 1504-3, repair method 3.1.

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DOP: UK9-50

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Renderoc FC

BS EN 1504-3: Structural and non-structural repair method 3

Compressive strength	Class R2: ≥ 15 MPa
Chloride ion content	≤ 0.05%
Adhesive strength by pull-off test	≥ 0.8 MPa
Thermal compatibility: freeze thaw thermal cycling with immersion	> 0.8 MPa
Reaction to fire	Class A2 s1 d0
Dangerous substances	Complies with 5.4

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Properties

The following results were obtained at a water : powder ratio of 0.27 and at a temperature of 20°C unless otherwise stated.

Test Method	Standard	EN 1504 R2 Requirement	Test result
Compressive strength	EN 12190:1999	≥ 15 MPa	≥ 15 MPa @ 28 days
Bond strength by pull off	EN 1542:1999	≥ 0.8 MPa	≥ 0.8 MPa
Chloride ion content	EN 1015-17:2000	≤ 0.05 %	≤ 0.05%
Freeze thaw cycling	EN 13687-1:2002	≥ 0.8 MPa	≥ 0.8 MPa
Fire rating	EN 13501-1	-	Class A2 s1 d0 Non-combustible
Setting time	BS 4551 Pt 14:1980	-	Initial set: 50 - 120 minutes
Fresh wet density	-	-	1600 - 1800 kg/m^3
Chemical resistance	-	-	The low permeability of Renderoc FC severely retards chemical attack in aggressive environments. The cured mortar is impermeable to acid gases, waterborne chloride ions and oxygen
Build characteristics (hand applied) **Minimum thickness:** **Maximum thickness**	-	-	 0 mm Up to 3.0 mm

Clarification of property values: The typical properties given above are derived from laboratory testing. Results derived from field applied samples may vary.

Application instructions

Preparation

* Clean the surface and remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits or algae. Roughen the surface to remove any laitance and expose the fine aggregate by light scabbling or grit-blasting.

Oil and grease deposits should be removed by steam cleaning, detergent scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should then be assessed by a pull-off test.

Renderoc repair mortars require no additional preparation prior to the application of Renderoc FC.

No independent priming system is required.

The cleaned areas should be blown clean with oil-free compressed air before continuing. All prepared areas should be saturated surface dry immediately before the application of Renderoc FC, i.e. they should be thoroughly saturated with clean water and any residual surface water removed. Under severe drying conditions repeated soaking may be necessary to ensure the substrate is still saturated at the time of application.

Care should be taken and the work scheduled to ensure the water does not run onto areas of recently applied Renderoc FC less than 12 hours old.

*(Refer to HSE information sheet CIS36 regarding control of exposure to construction dust, available at www.hse.gov.uk)

If Renderoc FC is to be used in conjunction with Protectosil CIT corrosion inhibitor, always apply Protectosil CIT prior to Renderoc FC. Allow Protectosil CIT to fully dry before proceeding with Renderoc FC application.

Mixing

Care should be taken to ensure that Renderoc FC is thoroughly mixed. As with other 'one pack' repair mortars, Renderoc FC may exhibit satisfactory handling characteristics even though inadequately mixed. This will result in a significantly lower level of performance or possible failure. It is therefore essential that mixing Instructions are strictly adhered to with particular emphasis on the quantity of water used and the time of the mixing operation.

If mixing small quantities, use a balance to weigh out the required quantity of Renderoc FC. Water must be measured in a proportion between 0.26 and 0.28 of the weight of the powder. E.g. for 10kg powder, use between 2.6 and 2.8 litres of water.

Mix using a forced-action mixer or a in a suitably sized drum using a Renderoc Mixing Paddle (MR4) with a slow speed (400/500 rpm) heavy-duty drill. For larger volumes, place 6.5 - 7.0 litres of drinking quality water into the mixer and, with the machine in operation, add one full 25 kg bag of Renderoc FC and mix for a minimum of 3 minutes (maximum 5 minutes). Dependent on the ambient temperature and the desired consistency, the amount of water required may vary slightly but should not exceed 7.0 litres per 25 kg bag of Renderoc FC. Do not subsequently re-temper with extra water.

Note: that in all cases Renderoc FC powder must be added to water.

Application

Apply the mixed Renderoc FC to the prepared substrate by steel trowel as a scrape coat of minimal thickness. It should be applied with the minimum of working and be allowed to partly set before finally trowelling to a smooth finish. If a very smooth finish is required, a small amount of water may be flicked on to the surface of the Renderoc FC with a paint brush prior to final trowelling.

Alternatively Renderoc FC may be finished using a damp (not wet) sponge.

Do not proceed with the application when rainfall is imminent unless in a sheltered or protected situation.

Note: the maximum applied thickness of Renderoc FC is 3 mm from the depths of the imperfections to the finished surface.

Low temperature working

Normal precautions for winter working with cementitious materials should then be adopted. The material should not be applied when the substrate and/or air temperature is 5°C and falling. At 5°C static temperature or at 5°C and rising, the application may proceed.

High temperature working

At ambient temperatures above 35°C, the material should be stored in the shade and cool water used for mixing.

Curing

Renderoc FC does not require any form of curing in moderate ambient conditions, but under strong drying conditions (e.g. high winds) curing may be necessary. In this case Renderoc FC should be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR, sprayed on to the surface of the finished Renderoc FC in a continuous film, is recommended. Large areas should be cured as trowelling progresses (0.5 m2 at a time) without waiting for completion of the entire area. In very fast drying conditions, supplementary curing with polythene sheeting taped down at the edges should be used.

In cold conditions, the finished repair must be protected from freezing.

Overcoating with protective decorative finishes

Renderoc FC must be overcoated with the Dekguard range of coatings or suitable alternatives. The surrounding parts of the structure will benefit from the application of a barrier/decorative coating to limit the advance of chlorides and carbon dioxide, bringing them to the same protective standard as the repair itself. Fosroc recommend the use of the Dekguard range of protective, anti-carbonation coatings. These products provide a decorative and uniform appearance as well as protecting areas of the structure which might otherwise be at risk from the environment. Dekguard products may be applied over the repair area without prior removal of the Nitobond AR curing membrane. Other curing membranes must be removed prior to the application of Dekguard products.

Cleaning

Renderoc FC should be removed from tools, equipment and mixers with clean water immediately after use. Cured material can only be removed mechanically.

Estimating

Supply

Renderoc FC:	25 kg bags
Nitobond AR:	5 and 25 litre drums

Coverage and yield

Renderoc FC:	Approx. 15.0 litres / 25 kg bag (5 m² at 3 mm thickness)
Nitobond AR:	6 - 8 m^2/ litre

Notes: the actual yield per bag of Renderoc FC will depend on the consistency used.

Limitations

Renderoc FC should not be used when the temperature is below 5°C and falling. Due to the lightweight nature of Renderoc FC, the product should not be used in areas subjected to traffic (in these circumstances, Renderoc ST 05 should be considered).

Renderoc FC should not be exposed to moving water during application. Exposure to heavy rainfall prior to the final set may result in surface scour.

If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.

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Storage

The product has a shelf life of 12 months from the date of manufacture if kept in dry storage in the original, unopened bags. If stored at high temperatures and/or high humidity the shelf life may be reduced to less than 6 months.

Nitobond AR should be protected from frost.

Precautions

Health and safety

For further information refer to the appropriate Safety Data Sheets available at www.fosroc.com.

Fire

Renderoc FC is non-flammable.

Environmental Data (EPD)

GWP Total, A1 – A3: 0.284 kgCO2e per 1kg product.
GWP Total, A1 – D: 0.481 kgCO2e per 1kg product.

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