

Fosroc® Renderoc SC

constructive solutions

Dry spray repair mortar conforming to the requirements of BS EN 1504-3 Class R4

Uses

Renderoc SC is designed for large area repairs such as bridges, tunnels, retaining walls, dams, etc.

Renderoc SC is suitable for repair method 3.3, 7.1, 7.2 as defined by BS EN 1504-3.

Advantages

- Low rebound
- Rapid strength gain
- Low water absorption and chloride ion diffusion
- High resistance to carbon dioxide penetration
- Excellent bond to the concrete substrate
- Single component — ready to use
- No added caustic accelerators
- Contains no chloride admixtures

Description

Renderoc SC is supplied as a ready to use blend of dry powders which is formulated for application using the dry spray process.

The material is based on Portland cements graded aggregates silica fume, and chemical additives which provides a spray mortar with low rebound and handling characteristics. The low water requirement ensures good strength gain and long term durability.

Builds of up to 150 mm vertically and 75 mm overhead can be achieved in a single application.

Standards compliance

Renderoc SC complies with class R4 according to BS EN 1504-3 repair principal 3.3.

CE	
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EN1504-3 Concrete repair products for structural repair CC mortar (based on hydraulic cement)	
Compressive strength	Class R4 (≥45 MPa)
Chloride ion content	≤ 0.05%
Adhesive bond strength	≥ 2.0 MPa
Adhesive bond strength after freeze thaw thermal cycling	≥ 2.0 MPa
Carbonation resistance	$d_k \leq$ control concrete
Reaction to fire	Class A1
Dangerous substances	Complies with 5.4

Fosroc® Renderoc SC

Properties

The following results were obtained at a temperature of 20°C.

Test method	Standard	EN 1504 R4 Requirement	Result
Compressive Strength	EN 12190:1999	≥ 45 MPa	@ 1 Day 20 MPa @ 7 Days 45 MPa @ 28 Days 60 MPa
Bond strength by pull off:	EN 1542:1999	≥ 2.0 MPa	2.7 MPa
Chloride ion content:	EN 1015-17:2000	≤ 0.05 %	0.02%
Freeze thaw cycling:	EN 13687-1:2002	≥ 2.0 MPa	2.5 MPa
Resistance to carbonation d_k	EN 13295: 2005	$d_k \leq$ ref concrete	Complies
Fire rating	EN 13505-1		Class A1 Non-Combustible
Flexural strength	BS 6319 Pt 3: 1990	-	10 MPa @ 28 days
Setting time	BS 4551 Pt 14:1980	-	Initial set: 3.5 hours Final set: 5.0 hours
Fresh wet density		-	Nominally 2200 Kg/m ³
Shrinkage 25 x 25 x 285 prisms, 27 °C, 55% RH		-	< 300 microstrain @ 7 days
Alkali reactive particles	Method TI-B 52	-	≤ 1.0% vol %
Resistivity	-	-	28 - 30000 ohm cm
Coefficient of thermal Expansion	-	-	15x 10 ⁻⁶ /°C
Chemical resistance		-	The low permeability of Renderoc SC severely retards chemical attack in aggressive environments. The cured mortar is impermeable to acid gases, waterborne chloride ions and oxygen.
Build Characteristics			
Minimum thickness:	-	-	10 mm
Vertical:	-	-	Up to 150 mm
Horizontal:	-	-	Up to 75 mm

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

Fosroc® Renderoc SC

Application instructions

Preparation

Clean the surface and remove any dust, unsound or contaminated material, plaster, oil, paint, grease, corrosion deposits or algae. Where breaking out is not required, i.e. concrete is sound and of good quality, but cover is to be increased, roughen the surface and remove any laitance by light scabbling or abrasive-blasting. It will still be necessary to cut back the perimeter to a depth of 10 mm so that the repair patch may be 'toed-in' and finished flush with the surrounding concrete.

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.

Expose fully any corroded steel in the repair area and remove all loose scale and corrosion deposits. Steel should be cleaned to a bright condition paying particular attention to the back of exposed steel bars. Abrasive-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 abrasive-blasting to remove corrosion products from pits and imperfections within its surface.

Reinforcing steel priming

Extra protection to the reinforcing steel can be achieved by application of one full coat of Nitoprime Zincrich Plus and allowing to dry before continuing. If any doubt exists about having achieved an unbroken coating, a second application should be made and, again, allowed to dry before continuing.

Substrate priming

Soak the prepared concrete surface thoroughly, allowing surplus water to drain off.

Application

Exposed steel reinforcing bars should be firmly secured to avoid movement during the application process as this will affect mortar compaction, build and bond.

Renderoc SC should be emptied from the bags directly into the hopper of the dry spray process machine. The amount of water added should be controlled by the nozzleman. Too little water will increase rebound and dust emission, too wet a mix will slump.

If sagging occurs during application to vertical or overhead surfaces, the Renderoc SC should be completely removed and re-applied.

Finishing

Renderoc SC is finished by striking off with a straight edge and closing with a steel float. Wooden or plastic floats, or damp sponges may be used to achieve the desired surface

texture. The completed surface should not be overworked.

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.

Curing

Renderoc SC is a cement-based mortar. In common with all cementitious materials, Renderoc SC must be cured immediately after finishing in accordance with good concrete practice, i.e. using a curing membrane, Concure WB or wet hessian or polythene. Concure WB should not be used when a subsequent coating is to be applied or cathodic protection systems are to be used. In cold conditions, the finished repair must be protected from freezing.

Cleaning

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

Equipment used with Nitoprime Zincrich Plus should be cleaned with Fosroc Solvent 102.

Estimating

Supply

Renderoc SC:	25 kg bags
Nitoprime Zincrich Plus:	1.9ltr and 800ml cans
Fosroc Solvent 102:	5 and 25 litre tins
Concure WB:	20 and 200 litre drums

Coverage and yield

Renderoc SC:	Approx. 12.5 litres / 25 kg bag (approx. 80 bags/m ³)
Nitoprime Zincrich Plus:	8 m ² /litre
Concure WB:	3.5 - 5.0 m ² /litre

Notes: The actual yield per bag of Renderoc SC will depend on the water addition during application. The coverage figures are theoretical — due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

Limitations

Renderoc SC should not be used when the temperature is below 5°C and falling. The product should not be exposed to



Fosroc® Renderoc SC

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 Customer Services Department.

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.

Store in unopened bags in cool dry internal conditions. Bags are not waterproof; do not store complete or part pallets externally. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced to less than 6 months.

Precautions

Health and safety

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

Fire

Renderoc SC is non-flammable.

Concure WB is non-flammable.

Nitoprime Zincrich Plus and Fosroc Solvent 102 are flammable. Keep away from sources of ignition. No Smoking. In the event of fire, extinguish with CO₂ or foam. Do not use a water jet.

Flash points

Nitoprime Zincrich Plus:	41°C
Fosroc Solvent 102:	33°C



Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Services, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification of information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation of information given by it.

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