

# Fosroc® Patchroc 250

constructive solutions

**Fast setting micro-concrete for thick section patch repairs to concrete carriageways, pavements and floors. BS EN 1504-3 Class R4 approval**

## Uses

For rapid and permanent reinstatement of localised thick section patches in concrete carriageways, pavements, airport aprons, access ramps and floors.

Fosroc Patchroc 250 has a unique cement chemistry to rapidly reinstate thick sections of concrete without excessive heat generation and associated cracking

Particularly useful when interruption of traffic must be minimised

The product is alkaline in nature and will protect embedded steel reinforcement. It may be used internally and externally.

Patchroc 250 is suitable for repair methods 3.1, 3.2, 4.4, 7.1 and 7.2, as defined by BS EN 1504-3.

## Advantages

- Rapid strength gain — will generally accept traffic in 2 hours at 20°C
- High strength, abrasion and weather resistance, makes it ideal for external works
- May be left as a trafficable finish
- Suitable to be overlaid with compatible deck membranes and coatings when the moisture content is <6%, typically 3-4 hours after cure
- One component, pre-bagged to overcome site-batched variations requires only the site addition of clean water
- Does not normally require a primer to achieve high bond strengths
- Excellent bond to the concrete substrate
- Shrinkage compensation ensures no cracking
- Controlled heat of hydration minimizes risk of thermal cracking.
- Contains no chloride admixtures

## Description

Patchroc 250 is supplied as a ready to use blend of dry powders which requires only the site addition of clean water to produce a highly consistent repair mortar.

It is based on Portland cements, graded aggregates, and chemical additives providing a unique blend with good handling characteristics while minimizing water demand. The low water requirement ensures rapid strength gain and long-term durability.

Patchroc 250 may be applied in depth up to a maximum of 250mm and in bay sized up to 4m<sup>2</sup>. It may be applied down to a minimum thickness of 25mm. Patchroc is designed specifically for horizontal use, though could be applied at gradients up to 2.5%


## Specification Clause

The repair mortar shall be Patchroc 250, a one component micro-concrete

The cured material shall achieve a compressive strength of 50 MPa at 28 days and a drying shrinkage of <300 micro-strain at 7 days.

## Standards compliance

Patchroc 250 complies with the classification R4 according to EN 1504-3, repair methods 3.1, 3.2, 4.4, 7.1 and 7.2

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<b>Patchroc 250</b>	
EN 1504-3 Structural and non structural repair methods 3, 4 and 7	
Compressive strength	Class R4 (> 45 MPa)
Chloride ion content	≤ 0.05 %
Adhesive strength by pull-off test	≥ 2.0 MPa
Thermal compatibility: freeze-thaw cycling with immersion	≥ 2.0 MPa
Carbonation resistance	Pass
Elastic modulus in compression	≥20 GPa
Capillary absorption	0.5 kg / (m <sup>2</sup> .h <sup>-0.5</sup> )
Stiffening time	10 / 25 minutes
Workability	120mm (10 min)
Reaction to fire	Class A1
Dangerous substances	Complies with 5.4

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## Properties

The following results were obtained at a water : powder ratio of 0.10 and a temperature of 20°C unless otherwise stated.

Test method	Standard	EN 1504 R4 Requirement	Test result
Compressive Strength	EN 12190:1999*	≥ 45 MPa	@ 3 hours 30 MPa @ 1 day 40 MPa @ 7 days 45 MPa @ 28 days 50 MPa
Fire rating	EN 1504-3 cl. 5.5	-	Class A1 Non-Combustible
Setting time	BS 4551 Pt14:1980	-	Initial set: 40 mins Final set: 60 mins
Working life:	-	-	@ 10°C @ 20°C 60 min 30 min
Traffic time- Pedestrian: Vehicular:	-	-	@ 10°C @ 20°C 4 hours 2 hours 4 hours 2 hours
Chemical resistance	-	-	The low permeability of Patchroc 250 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:	-	-	25 mm
Maximum thickness:	-	-	250 mm
Maximum bay area	-	-	4 m <sup>2</sup>

\* To give a true reflection of site strengths, the early age cure up to 1 day has been made at an elevated temperature to replicate the exotherm generated from whole bag mixes.

**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

\*Angle form the edges of the repair to a depth of at least 12mm. Break out the complete repair area to a minimum depth of ≥13 mm from the angle edge (total minimum depth 25mm).

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, roughen the surface and remove any laitance by light scabbling or abrasive-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.

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.

\*(Refer to HSE information sheet CIS36 regarding control of exposure to construction dust, available at [www.hse.gov.uk](http://www.hse.gov.uk))

### Reinforcing steel priming

Apply one full coat of Nitoprime Zincrich Plus and allow this 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 Preparation

The concrete substrate should be saturated surface dry immediately before the application of Patchroc 250. This is best achieved by filling the prepared areas to be repaired with clean water. Immediately prior to the application of Patchroc 250, any excess water should be removed.

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Under severe drying conditions repeated soaking may be necessary to ensure the substrate is still saturated at the time of application of the repair material.

## Mixing

Care should be taken to ensure that Patchroc 250 is thoroughly mixed. A forced-action mixer is essential. For small quantities the occasional one bag mix, mixing in a suitably sized drum using an approved Renderoc Mixing Paddle (MR4) with a slow speed (400/500 rpm) heavy-duty drill is acceptable.

Free-fall mixers must not be used. Mixing of part bags should never be attempted.

For mixers without a bottom exit place 2.5 litres of drinking quality water into the mixer. With the machine in operation, add one full bag of Patchroc 250 and mix, for a minimum of 3 minutes, stop the machine and scrape the bowl & blades to ensure there is no unmixed powder, and mix for a further 3 minutes or minutes, until fully homogeneous.

For machines with a bottom exit, add the powder to the bowl first, start the mixer and then add the water. Mix as above.

The consistency may be adjusted by varying the water content between 2.2 litres and 2.8 litres per bag.

## Mixing warning

As with other 'one pack' repair mortars, Patchroc 250 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.

## Application

Exposed steel reinforcing bars should be firmly secured to prevent movement during application.

Pour the Patchroc 250 into the repair area, tamp into place to ensure complete compaction. Thoroughly compact the material around any exposed steel reinforcement. Patchroc 250 can be applied between thicknesses of 25 - 250mm in a single application.

Aim for an uninterrupted mix and pour of material to the repair area, keeping time between successive pours to less than 10 minutes

Patchroc 250 should be struck off to the correct level and finished with a steel trowel to a fully closed surface. The finished surface should not be overworked.

## Build-up

Additional build-up can be achieved by application of multiple layers.

The surface of the intermediate layers should be comb scratch-keyed. A further application of Patchroc 250 may proceed as soon as this layer has set.

## Low temperature working

In cold conditions down to 5°C, the use of warm mixing water (up to 30°C) is advisable to accelerate strength development. 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 3°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

In fast drying conditions, curing with either Concure WB, Nitobond AR or polythene sheeting polythene sheeting taped down at the edges must be used. In cold conditions, the finished repair must be protected from freezing. Where Patchroc 250 is to be later overcoated with a deck membrane or other coating system, the use of only polythene sheeting for curing is recommended.

## Cleaning

Patchroc 250 should be removed from tools, equipment and mixers with clean water immediately after use. Cured material can only be removed mechanically.

## Estimating

### Supply

Patchroc 250:	25 kg bag, 500kg sack
Concure WB:	20 and 200 litre drums

### Coverage and yield

Patchroc 250:	Approximately 12 litres / 25kg bag
Concure WB:	5 m <sup>2</sup> / litre

Notes: the actual yield per bag of Patchroc 250 will depend on the consistency used.

## Limitations

Patchroc 250 should not be used when the temperature is below 5°C and falling. Do not mix part bags.

Patchroc 250 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.

## Precautions

### Health and safety

For further information refer to the appropriate Safety Data Sheets available at [www.fosroc.com](http://www.fosroc.com).

### Fire

Patchroc 250 is non- flammable.

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#### 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. All Fosroc datasheets are updated on a regular basis. It is the user's responsibility to obtain the latest version.

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