



Patchroc GP

Fast-setting emergency patching mortar for concrete pavements and floors

Uses

For the emergency reinstatement of localised patches in concrete pavements, airport aprons, access ramps, roadways and many industrial situations such as gangways and warehouse floors. Patchroc GP is particularly useful where interruption to traffic must be minimised. The product is alkaline in nature and will protect embedded steel reinforcement. It may be used internally and externally.

For the reinstatement of large areas of concrete pavements and floors, the use of Paveroc is recommended.

Advantages

- Rapid strength gain - will accept traffic in one hour.
- High strength, abrasion and weather resistance.
- Single component product eliminates site batching and requires only the site addition of clean water.
- Excellent bond to the concrete substrate.
- Shrinkage compensated.
- Contains no chloride admixtures.

Description

Patchroc GP 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, high strength, patch repair mortar which vertically self-compacts. The material is based on a blend of cements, graded aggregates, special fillers and chemical additives to provide a mortar with good handling characteristics, while minimising water demand. Patchroc GP exhibits excellent thermal compatibility with concrete and good water repellent properties. The low water requirement ensures fast strength gain and long term durability.

Technical support

Fosroc offers a comprehensive range of high performance, high quality repair, and maintenance and construction products. In addition, Fosroc offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the world.

Design criteria

Patchroc GP is designed for horizontal use, it can be applied to small areas of concrete requiring not more than 12 litres of patching material (each bag of Patchroc GP is designed to produce a 12 litres yield). Thicker sections can be built up in layers. The material should not be applied at less than 12 mm thickness. Consult the local Fosroc office for further information.

Properties

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

Compressive strength (BS 1881 Part 116:1983):	20 N/mm ² @ two hours 50 N/mm ² @ one day 65 N/mm ² @ 3 days 70 N/mm ² @ 28 days
Working life:	20 minutes @ 20°C 10 minutes @ 35°C
Setting time:	25 minutes @ 20°C 15 minutes @ 35°C
Traffic time:	
Pedestrian	1 ½ hours @ 20°C 1 hour @ 35°C
Vehicular	2 hours @ 20°C 1 hour @ 35°C
Coefficient of thermal expansion:	7 to 12 X 10 ⁻⁶ /°C
Fresh wet density:	Approximately 2300 kg/m ³ dependent on actual consistency used.

Specification clauses

Steel reinforcement primer

Where reinforcement has been exposed by the preparation process, the steel primer shall be Nitoprime Zincrich, a single component zinc-rich epoxy resin. The primer shall be an 'active' type, capable of avoiding the generation of incipient anodes in the immediately adjacent locations. It shall be fully compatible with the Renderoc system of concrete repair.

Rapid patching mortar

The rapid patching mortar shall be Patchroc GP, a single component cement-based blend of powders to which only the site-addition of clean water shall be permitted. The cured mortar shall achieve 20 N/mm² at two hours and 50 N/mm² at 24 hours (20°C). The product shall be capable of accepting pedestrian and vehicular traffic after 2 hours at 20°C.

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Application instructions

Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 10 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 12 mm up to the sawn edge.

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 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.

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. 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 abrasive-blasting to remove corrosion products from pits and imperfections within its surface.

The prepared area should be blown clean with oil-free compressed air.

Substrate priming

The substrate should be thoroughly soaked with clean water and any excess removed prior to applying one coat of Nitobond AR primer and scrubbing it well into the surface. Patchroc GP may be applied as soon as the primer becomes tacky.

Mixing

Care should be taken to ensure that Patchroc GP is thoroughly mixed. A forced-action mixer is essential. Mixing in a suitably sized drum using an approved Renderoc Spiral Paddle in a slow speed (400/500 rpm) heavy duty drill is acceptable for the occasional one bag mix. Free fall mixers must not be used. Mixing of part bags should never be attempted.

It is recommended that only one bag of Patchroc GP is mixed at any one time to ensure that all the mortar can be placed within its working life. Place 2.5 to 2.7 litres of drinking quality water into the mixer and, with the machine in operation, add one full 25 kg a of Patchroc GP and mix for 3 minutes until fully homogeneous. Do not mix for longer than this time to ensure that the available working life is not reduced. Note that powder must always be added to water.

Application

Apply the mixed Patchroc GP on to the primed substrate as soon as possible after mixing. The mortar should be applied evenly by trowel and tamped in place with a wood float to ensure full compaction. Thoroughly compact the mortar around any exposed steel reinforcement. Patchroc GP can be applied up to 50 mm thickness in single applications.

Note the minimum applied thickness of Patchroc GP is 12 mm.

Build-up

Repair sections greater than 50 mm thickness can be achieved by application of multiple layers. In this instance, the surface of the intermediate layers should be scratch-keyed and allowed to set for a minimum of 2 hours before continuing. Re-priming with Nitobond AR and a further application of Patchroc GP may proceed at this time

For repair sections between 50 mm and 100 mm, thick Patchroc GP can be filled out with 10 mm nominal size aggregate using the mix design shown below.

Patchroc GP:	25 kg
10 mm aggregate (SSD):	10 - 12 kg
Water (approximately):	2.75 litres

Finishing

Patchroc GP should be struck off to the correct level and finished with a steel trowel to fully close the surface. If a textured surface is required, this can be achieved using a suitable roller or brush. The completed surface should not be overworked.

Low temperature working

In cold conditions down to 5°C, the use of warm 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 5°C and rising, the application may proceed.

High temperature working

At ambient temperatures above 30°C, the material should be stored in the shade and cool water used for mixing.

Curing

Patchroc GP is a cement-based repair mortar. In common with all cementitious materials, Patchroc GP must be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR or Concure 90 Clear, sprayed on to the surface of the finished mortar in a continuous film, is recommended. In fast drying conditions, supplementary curing with polythene sheeting taped down

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

Over-coating with protective finishes

Patchroc GP is extremely durable and will provide an excellent hard wearing surface to the repaired locations. Surrounding floor areas may benefit from the application of an abrasion or chemical-resistant protective coating. For internal locations, Fosroc recommend the use of the Nitoflor FC range of protective coatings. These products provide a decorative and uniform appearance as well as protecting areas of the floor which might otherwise be at risk. Nitoflor FC products may be applied over the repair area after prior removal of the curing membrane generally after 3 days. The local Fosroc office should be contacted for advice about external protective overlays.

Cleaning

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

Equipment used with Concure 90 Clear should be cleaned with Fosroc Solvent 102.

Limitations

Patchroc GP should not be used when the temperature is below 5°C and falling. Do not mix part bags. Exposure to heavy rainfall prior to the final set may result in surface scour. The product should not be exposed to moving water during application. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.

Estimating

Supply

Patchroc GP:	25 kg bags
Nitobond AR:	4 & 25 litre drums
Concure 90 Clear:	25 and 200 litre drums
Fosroc Solvent 102:	25 litre drums

Coverage and yield

Patchroc GP:	Approximately 12.0 litres per 25 kg bag (1.0 m ² at 12 mm thickness)
Nitobond AR:	6 to 8 m ² per litre
Concure 90 Clear:	4 to 5 m ² per litre

Note: The actual yield per bag to Patchroc GP will depend on the consistency used. The coverage figures for liquid products are theoretical - due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

Storage

Shelf life

All products have a shelf life of 9 months if kept in a dry store in the original, unopened bags or packs.

Storage conditions

Store in dry conditions in the original, unopened bags or packs. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced to 4 to 6 months. Nitobond AR should be protected from frost.

Precautions

Health and safety

Patchroc GP contains cement powders which, during normal use, have no harmful effect on dry skin. However when Patchroc GP is mixed, or becomes damp, alkali is released which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes. Nitobond AR, Concure 90 Clear and Fosroc Solvent 102 should not be allowed to come into contact with skin or eyes or be swallowed.

Wear suitable gloves, eye protection and dust masks. The use of barrier creams is recommended. In case of contact with skin, wash with clean water. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately - **do not** induce vomiting.

Fire

Patchroc GP, Nitobond AR and Nitobond EP are non-flammable.

Concure 90 Clear 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

Fosroc 90 Clear:	40°C
Fosroc Solvent 102:	40°C



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Additional information

Pachroc GP was formerly known as Nitoflor Patchroc. For the reinstatement of large areas of concrete pavements and floors, the use of Paveroc is recommended.

Fosroc manufactures a wide range of products specifically designed for the repair and refurbishment of damaged reinforced concrete. These include hand-placed and spray grade repair mortars, fluid micro-concretes, chemical resistant epoxy mortars and a comprehensive package of protective coatings. In addition, a wide range of complimentary products is available. This includes joint sealants, waterproofing membranes, grouting, anchoring and specialised flooring materials.

Fosroc have also produced several educational training videos which provide more details about the mechanisms which cause corrosion within reinforced concrete structures and the solutions which are available to arrest or retard these destructive mechanisms. Further information is available from the publications. Concrete Repair and Protection. The 'Systematic Approach', available in seven language formats.

For further information about products, training videos or publications, contact the local Fosroc office.



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Important note:

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