

# Paveroc

Reinstatement mortar for concrete pavements and floors

## Uses

For the reinstatement of large areas of concrete pavements and floors to avoid the total replacement of bays. The rapid strength gain of Paveroc will ensure that down-time is significantly reduced. The product is alkaline in nature and will protect embedded steel reinforcement. It may be used internally and externally.

For emergency patching of small areas of concrete pavements and floors, the use of Patchroc GP is recommended.

## Advantages

- Rapid strength gain - will generally accept pedestrian traffic at 12 hours.
- 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

Paveroc 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, repair mortar for large areas of concrete pavements and floors. 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. Paveroc 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

Paveroc is designed for horizontal use, it may be applied up to a maximum thickness of 50 mm. Thicker sections can be built up in layers. The material should not be applied at less than 12 mm thickness. Individual bay sizes should not exceed 18 m<sup>2</sup>. Consult the local Fosroc office for further information.

## Properties

The following results were obtained at a water:powder ratio of 0.08 and temperature of 20°C unless otherwise stated.

<b>Compressive strength (BS 1881 Part 116:1983):</b>	20 N/mm <sup>2</sup> @ 1 day 35 N/mm <sup>2</sup> @ 7 days 50 N/mm <sup>2</sup> @ 28 days
<b>Working life:</b>	1 hour @ 10°C 55 minutes @ 20°C 20 minutes @ 35°C
<b>Setting time:</b>	110 minutes @ 10°C 65 minutes @ 20°C 35 minutes @ 35°C
<b>Traffic time:</b>	
<b>Pedestrian:</b>	18 hours @ 10°C 12 hours @ 20°C 7 hours @ 35°C
<b>Vehicular:</b>	36 hours @ 10°C 24 hours @ 20°C 12 hours @ 35°C
<b>Coefficient of thermal expansion:</b>	7 to 12 X 10 <sup>-6</sup> /°C
<b>Fresh wet density:</b>	Approximately 2300 kg/m <sup>3</sup> dependent on actual consistency used.

## Specification clauses

### Steel reinforcement primer

The steel reinforcement 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.

### Pavement/flooring reinstatement mortar

The pavement/flooring reinstatement mortar shall be Paveroc, 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/mm<sup>2</sup> at one day and 50 N/mm<sup>2</sup> @ 28 days (20°C). The product shall be capable of accepting pedestrian traffic after 18 hours at 10°C or 12 hours @ 20°C.

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## Application instructions

### Notes

To avoid possible reflective cracking in the Paveroc repair, it is essential that live cracks and existing joint details in the substrate be given proper attention. Due consideration must always be given to existing joint details and these must be followed through the Paveroc repair; live cracks should be treated by an approved method. For further information, contact the local Fosroc office.

### 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, grit-blasting, scabbling or by needle-gun to form a good key.

Oil and grease deposits should be removed by steam cleaning or 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 grit-blasting to remove corrosion products from pits and imperfections within its surface.

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

### Reinforcing steel priming

Apply one full coat of Nitoprime Zincrich to all exposed reinforcing steel and allow 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

The substrate should be thoroughly soaked with clean water and any excess removed immediately prior to priming.

Any areas of the substrate which dry out before application of the primer must be re-dampened before continuing.

The concrete must be primed with Nitobond AR a acrylic emulsion which is scrubbed into the surface of the concrete, Nitobond AR will dry in approximately 1 hour (depending upon temperature and substrate porosity).

Paveroc should be applied to the primed surface as soon as possible after mixing, ideally with the primer having been allowed to become tacky.

In exceptional circumstances, e.g. where a substrate/repair barrier is required or where the substrate is wet or likely to remain permanently damp, Nitobond EP bonding aid should be used. Contact the local Fosroc office for further information.

### Mixing

Care should be taken to ensure that Paveroc is thoroughly mixed. A forced action mixer is essential. Mixing in a suitably sized drum using an approved 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.

Place 1.9 to 2.2 litres of drinking quality water into the mixer and with the machine in operation, add one full 25 kg bag of Paveroc and mix for 3 minutes until fully homogeneous. Note that powder must always be added to water.

### Mixing warning

As with other 'one pack' repair mortars, Paveroc 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

Apply the mixed Paveroc 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. Paveroc can be applied up to 50 mm thickness in single applications.

Note the minimum applied thickness of Paveroc is 12 mm.

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## Build-up

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, covered with polythene sheeting secured at the edges, and allowed to set for a minimum of 3 hours before continuing.

Re-priming as described above and a further application of Paveroc may proceed at this time.

## Finishing

Paveroc 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 over-worked.

## Low temperature working

In cold conditions down to 5°C, the use of warm water (upto 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

Paveroc is a cement-based repair mortar. In common with all cementitious materials, Paveroc must be cured immediately after finishing in accordance with good concrete practice. The use of Concure 90 Clear, sprayed on to the surface of the finished mortar in a continuous film, is recommended. Large areas should be cured as trowelling progresses (0.5 m<sup>2</sup> at a time) without waiting for completion of the entire area. Avoid overspray at edges on to the surrounding substrate. In fast drying conditions, supplementary curing with polythene sheeting taped down at the edges must be used. In cold conditions, the finished repair must be protected from freezing.

## Over-coating with protective finishes

Paveroc 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 overlayers.

## Cleaning

Nitobond AR and Paveroc 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 and Nitobond EP should be cleaned with Fosroc Solvent 102. Equipment used with Concure 90 Clear should be cleaned with Fosroc Solvent 103.

## Limitations

Paveroc 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

<b>Paveroc:</b>	25 kg bags
<b>Nitoprime Zinc Rich:</b>	1 and 2.5 litre pack
<b>Nitobond AR:</b>	4 litre and 25 litre pack
<b>Nitobond EP:</b>	1 and 5 kg pack
<b>Concure 90 Clear:</b>	25 and 200 litre drum
<b>Fosroc Solvent 102:</b>	4 litre cans
<b>Fosroc Solvent 103:</b>	25 litre pail

### Coverage and yield

<b>Paveroc:</b>	Approximately 11.5 litres per 25 kg bag (0.9 m <sup>2</sup> at 12 mm thickness)
<b>Nitoprime Zinc Rich:</b>	7.4 m <sup>2</sup> /litre
<b>Nitobond AR:</b>	6 to 8 m <sup>2</sup> /litre
<b>Nitobond EP:</b>	5 m <sup>2</sup> /pack
<b>Concure 90 Clear:</b>	4 to 5 m <sup>2</sup> /litre

Note: The actual yield per bag to Paveroc 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 12 months if kept in a dry store in the original, unopened bags or packs.



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## 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

Paveroc contains cement powders which, when mixed or become damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes.

Wear suitable protective clothing, gloves, eye protection and respiratory protective equipment. 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.

Nitobond AR, Nitobond EP, Concure 90 Clear and Fosroc Solvent 102 and 103 should not come into contact with skin and eyes, or be swallowed. Avoid inhalation of vapours and ensure adequate ventilation. Wear suitable protective clothing, gloves, and eye protection. The use of barrier creams provide additional skin protection. If working in confined areas, suitable respiratory protective equipment must be worn.

In case of contact with skin, remove with resin removing cream, then cleanse with soap and 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

Paveroc, Nitobond AR and Nitobond EP are non-flammable.

Nitoprime Zinc Rich, Concure 90 Clear and Fosroc Solvent 102 and 103 are flammable. Keep away from sources of ignition. **No smoking**. In the event of fire, extinguish with CO<sub>2</sub> or foam. **Do not** use a water jet.

## Flash points

<b>Nitoprime Zinc Rich:</b>	16°C
<b>Fosroc 90 Clear:</b>	40°C
<b>Fosroc Solvent 102:</b>	33°C
<b>Fosroc Solvent 103:</b>	40°C

## Additional information

For emergency patching of small areas of concrete pavements and floors, the use of Patchroc GP 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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