



Patchroc RSP

Rapid-setting patch repair concrete for pavements and floors

Uses

For the emergency reinstatement of damaged or deteriorated concrete. The material is particularly suitable for repairs to airport runways, aprons and areas where wheeled traffic requires fast return to service. It may be used internally and externally.

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

Advantages

- Rapid strength gain - will accept vehicular traffic in 2 hours.
- High strength, abrasion and weather resistance.
- Economical - can be 'bulked-out' with graded aggregate in some locations.
- Self-compacting - eliminates honey-combing and voids.
- Contains no chloride admixtures.

Description

Patchroc RSP is supplied as a ready to use blend of dry powders and graded aggregates which requires only the site addition of clean water to produce a highly consistent, high strength, free-flowing repair concrete which self-compacts.

The material is a blend of inorganic cements, special fillers and chemical additives to control the rate of strength gain to provide a fluid micro-concrete with good handling characteristics. Patchroc RSP exhibits excellent thermal compatibility with concrete and good water repellent properties.

Technical support

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

Design criteria

Patchroc RSP is designed for horizontal use but can also be used vertically the aid of formwork. It is suitable for use at nominal thickness of 100mm. Thicker sections up to 250mm may be applied by the addition of graded silt-free aggregate.

The material should not be applied at less than 20mm thickness. Aggregate should not be added at applied thickness between 20mm and 100mm without specific advice from Fosroc. Horizontal surface areas should be restricted to bay sizes not exceeding 4m² and 12m² where filled with aggregate. Consult the local Fosroc office for further information.

Properties

The physical properties given are typical of those obtained in practice.

Test method	Typical Result
Compressive strength (BS1881: Part 116:1983) w/p ratio 0.18 - 100mm cubes wet cured @25°C:	20 N/mm ² @ 2 hours 35 N/mm ² @ 3 hours 45 N/mm ² @ 1 day 60 N/mm ² @ 3 day 70 N/mm ² @ 28 days
Working Life :	30 mins @ 25°C 20 mins @ 25°C
Setting time (BS4550:Part 3: 1978) w/p ratio 0.18 @ 25°C - initial set:	40 mins
final set:	50 mins
Traffic time (@ 25°C) - pedestrian:	1 hour
vehicular	2 hours
Coefficient of thermal expansion	11x10 ⁻⁶ /°C

Fresh wet density: approximately 2270kg/m³ dependent on actual consistency used.

Specification clauses

Fast setting patch repair concrete

The fast setting repair concrete shall be Patchroc RSP, a single component cement-based blend of powders and graded aggregates to which only the site-addition of clean water shall be permitted. The cured patch repair concrete shall achieve 20N/mm² after 2 hours and 45N/mm² after 1 day (@25°C). The product shall be capable of accepting pedestrian and vehicular traffic after 2 hours (@25°C).

Application instructions

Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 20mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 20mm 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.

Patchroc RSP

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

Temporary formwork should be fitted tightly into all existing pavement and floor joints which abut the repair zone in order to prevent grout loss during the repair process.

Substrate priming

Prior to placing, the prepared concrete substrate should be saturated by flooding with clean water. Immediately prior to the application of Patchroc RSP, the water should be removed leaving the substrate fully saturated.

Providing the substrate has been properly soaked, further priming is not normally necessary. Where soaking is not possible, the following procedure should be used. The substrate should be well soaked with clean water for as long as possible and any excess removed. Nitobond AR primer should then be scrubbed well into the surface. Patchroc RSP may be applied as soon as the primer becomes tacky.

Note: If the primer dries before Renderoc RSP is applied, repriming should take place exactly as described above before continuing.

Mixing

Care should be taken to ensure that Patchroc RSP 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. Free-fall mixers must not be used. Mixing of part bags should never be attempted.

It is essential that machine mixing capacity and labour availability is adequate to enable the placing operation to be carried out continuously. Measure 5 to 5.5 litres of drinking quality water and pour three-quarters into the mixer. With the machine in operation, add one full 30kg bag of Patchroc RSP and mix for one minute before adding the rest of the water. Mix for a further 3 to 4 minutes until a smooth even consistency is obtained. Note that powder must always be added to water. The quantities mixed may be scaled up as required.

When the drill and paddle mixing method is used, the complete measured volume of water should be placed in the mixing drum. With the paddle rotating, add one full 30kg bag of Patchroc RSP and mix for 3 to 5 minutes until a smooth even consistency is obtained.

It is recommended that the mixed product be passed through a suitable coarse metal screen prior to placing or pumping to highlight any unmixed material.

Placing

The mixed material should be placed within 10 minutes of mixing in order to gain the full benefit of fluidity. Each repair should be poured or pumped in a single continuous operation.

Repairs may be surface finished using a trowel or wood float. If a textured surface is required, this can be achieved using a suitable roller or brush as the material begins to stiffen. The completed surface should not be overworked. Patchroc RSP can be applied up to 100mm thickness in a single application. For repair section deeper than 100mm, it will be necessary to 'fill-out' Patchroc RSP with suitable and property graded aggregate in order to minimise temperature rise. Aggregate should be in a saturated, surface dry condition. The quantity of aggregate required will vary dependent on the nature and configuration of the repair location. Generally, for sections between 100mm and 250mm deep, the following mix design should be considered:

30 kgs Patchroc RSP
4.7-5.2 litres clean water
12.5 kgs 8 to 12mm aggregate
7.5 kgs zone 2 sand

The water demand may vary dependent on the condition of the aggregate. To place the filled Patchroc RSP at the lower water content, the use of a vibrating poker is desirable, to aid compaction. The quantity of aggregate should never exceed 1 part aggregate to 1 part Patchroc RSP (by dry weight). Trial mixes should be made in order to ensure the optimum addition of both water and aggregate.

Note the minimum applied thickness of Patchroc RSP is 20mm. Aggregate should not be added at applied thicknesses between 20mm and 100mm without specific advice from Fosroc.

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

Curing

Patchroc RSP is a cement-based product. In common with all cementitious materials, Patchroc RSP 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 at the edges must be used. In cold conditions, the finished repair must be protected from freezing.



Patchroc RSP

Cleaning

Patchroc RSP and Nitobond AR 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 103.

Limitations

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

Estimating

Supply

Patchroc RSP	30kg bags
Nitobond AR	5 litre drums
Concrete 90 Clear	25 and 200 litre drums
Fosroc Solvent 103	25 litre drums
Coverage and yield	
Patchroc RSP	approximately 15.5 litres/ 30kg bag (0.76m ² at 20 mm thickness)
Nitobond AR	6 to 8 m ² /litre
Concure 90 Clear	4 to 5 m ² /litre

Note: the actual yield per bag of Patchroc RSP 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.

Storage conditions

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

Precautions

Health & safety

Patchroc RSP 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 provide additional skin protection. In case of contact with skin, rinse with plenty of clean water, 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.

Nitobond AR, Concure 90 Clear and Fosroc Solvent 103 should not come in contact with the skin and eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used.

The use of barrier creams provide additional skin protection. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. In case of skin contact with Nitoprime Zincrich and Concure 90 Clear, remove immediately with resin removing cream followed by washing with soap and water. Do not use solvent. 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 RSP and Nitobond AR are non-flammable. Concure 90 Clear and Fosroc Solvent 103 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

Concure 90 clear	40°C
Fosroc Solvent 103	40°C

For further information, refer to the Product Material Safety Data Sheet.

Additional Information

Patchroc RSP was formerly known as Renderoc RSP.



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Important note

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