

# Renderoc SPXtra

## Shrinkage controlled, repair mortar system, specifically designed for spraying

### Uses

Renderoc SPXtra is suitable for wet or dry spraying in a wide variety of repair applications, and is particularly well suited to vertical and overhead repairs. Typical applications would include, but not be limited to the following:

- Mass infill to large areas.
- Repairs to irregular profiles.
- Excellent for repairs to fire-damaged concrete.
- Fast track repair programmes, where rapid application at high volume is required.
- Single layer, high build applications.

### Description

Renderoc SPXtra is supplied as a ready to use blend of dry powders, which requires only the addition of clean water to produce a highly consistent, spray grade, repair mortar suitable for most repair situations.

### Advantages

Renderoc SPXtra features Dimensional Stability Technology - a new material technology which controls the rate of drying shrinkage such that, when used correctly:

- i. the dimensions of the repair remain stable and thus,
- ii. failure, due to shrinkage cracking, is eliminated.

### This in turn leads to a series of associated benefits:

- **Cost effective** - shrinkage control enables repairs to be completed 'right first time'.
- **Enhanced durability** - works in tandem with extremely low permeability to prolong effective working life.
- **Compatibility** - aligns performance closer than ever before, to that of host concrete.
- **User friendly** - specifically developed to provide an easy-to-apply product, suitable for local conditions.
- **Definable performance** - positive benefits are easily demonstrated via a single, simple measurement.



Sprayed repair project by Renderoc SPXtra for bridge deck soffit.

### Typical Properties

The following typical results were obtained at a water:powder ratio of 0.125.

Test method	Typical result
<b>Drying shrinkage to ASTM C596</b>	
<b>28 days:</b>	< 600 microstrain
<b>Permeability:</b> <b>(DIN 1048 Part 5)</b>	< 10 mm
<b>Flexural strength:</b> <b>(BS 6319 Pt 3)</b>	> 6.5 N/mm <sup>2</sup> at 28 days
<b>Tensile strength:</b> <b>(BS 6319 Pt 7)</b>	> 3 N/mm <sup>2</sup> at 28 days
<b>Compressive strength:</b> <b>(BS 1881 Pt 116)</b>	55 N/mm <sup>2</sup> at 28 days
<b>Water absorption:</b> <b>(BS 1881 Pt 122)</b>	< 2%

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## Standards Compliance

Renderoc SPXtra repair mortar system complies with the following international standards:

ASTM C596	:	Test for drying shrinkage
DIN 1048 Part 5	:	Test for permeability
BS 1881 Pt 122	:	Test for water absorption

## Application criteria

Dimensional Stability Technology is a major step forward in the general compatibility of repair mortar systems with the host concrete, and the control of shrinkage in particular.

Recommended limits for a single application are:

<b>Minimum applied thickness:</b>	10 mm
<b>Overhead sections:</b>	Up to 200 mm thick
<b>Vertical sections:</b>	Up to 200 mm thick
<b>Surface area of a single repair:</b>	See 'Note'

Note: The restricting factor on surface area will be the practicality of maintaining a continuous application.

## Specification of durable repairs

### Suggested specification

**Steel reinforcement primer** - the steel reinforcement primer shall be Fosroc Nitoprime Zincrich (WB), two components water-based zinc-rich primer to provide active, galvanic protection.

**Substrate primer** - the substrate primer shall be either:

- (I) Clean water for standard repairs, or
- (II) Fosroc Nitobond EP Slowset, an epoxy bonding agent where an impermeable substrate/repair interface is required.

**Repair mortar** - the spray grade repair mortar shall be Fosroc Renderoc SPXtra, incorporating **Dimensional Stability Technology**. The cured material shall exhibit the following performance characteristics:

Characteristic	Performance
<b>Drying shrinkage:</b>	< 600 microstrain at 28 days
<b>Permeability:</b>	< low permeability concrete
<b>Physical properties:</b>	Compatibility with the substrate

## Benefits of specifying shrinkage

Control of drying shrinkage is fundamental to preventing failure of repair mortars, since high drying shrinkage equates to high crack potential in the cured mortar - see graph below. The appearance of cracks in the repair mortar can be expressed mathematically as follows:

**Tensile stress due to drying shrinkage > 1.0 = cracks**  
**Tensile strength of the repair mortar**

Dimensional Stability Technology reduces the tensile stress so that not only is the ultimate value of drying shrinkage minimised; but also the rate of shrinkage (slope of the graph) is dramatically reduced - this is an equally important control mechanism.

## Application - points of note

Fosroc operates a policy to encourage the use, where possible, of approved applicators. This ensures that repairs are completed satisfactorily so that the long term performance of the materials is assured. For contractors who wish to apply the materials themselves Fosroc is also able to offer technical assistance and training.

## Application instructions

Clean the surface and remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits or algae. Roughen the surface and remove any laitance by light scabbling or grit-blasting. 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 10 mm up to the sawn edge.

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.

## Reinforcing steel priming

Apply one full coat of Nitoprime Zincrich (WB) 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

A bonding primer is not generally required. However, in exceptional circumstances, for example, where a substrate/repair barrier is required or where the substrate is likely to remain permanently damp, Nitobond EP Slowset bonding aid



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should be used. Please contact Fosroc for further information.

## Mixing

For either technique, water addition should not exceed 5 litres per 25 kg of powder.

## Application

For general guidelines on spraying, please refer to the Fosroc's Wet and Dry Spraying Application Guide.

The rapid placement and high build attainable from spraying offers attractive economic advantages.

## Multiple layers

Although not generally recommended as common practice, it may be necessary due to machine breakdown to stop work before completing the repair, in such cases it will become necessary to apply the repair mortar in more than one layer.

The surface of the first layer should be 'scratched-keyed' and cured with wet hessian.

Subsequent application of fresh Renderoc SPXtra may commence once this layer has reached its initial set.

## Finishing

Renderoc SPXtra is finished by striking off with a straight edge and closing with a steel or plastic float. Note that water can be drawn to the surface if 'overworking' with the float occurs, and an unsightly finish may result.

Damp sponges or plastic floats may be used to achieve a desired surface texture, but care should be taken not to overwork the surface.

## Curing

Renderoc SPXtra is a cement-based repair mortar. In common with all cementitious materials, Renderoc SPXtra must be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR or Concure WB80, sprayed on to the surface of the finished Renderoc in a continuous film, is recommended. In harsh drying conditions, supplementary curing such as polythene sheeting must be **Sampling Procedure**

Fosroc standard test methods must be employed when performance testing this product. For further information please contact your local Fosroc office

used. Concure WB80 must be removed before overcoating.

## Estimating

### Supply

<b>Renderoc SPXtra:</b>	25 kg bags
<b>Nitoprime Zincrich(WB):</b>	0.75 litre packs
<b>Nitobond EP Slowset:</b>	4 litre packs
<b>Concure WB80:</b>	25 and 200 litre drums

**Note:** In accordance with Commercial or Health & Safety requirements packaging detail may alter. Please contact your local Fosroc office for detail.

## Coverage

Yield and coverage rates of the products listed below are approximate, and will be wholly dependent upon the general substrate condition. It is recommended, therefore, that site trials over a typical area are conducted to determine the likely usage/coverage rates for a particular substrate.

**Renderoc SPXtra:** 1.38 m<sup>2</sup> at 10 mm thick  
(approx. 13.8 litres per 25 kg bag)

**Nitoprime Zincrich(WB):** 6.5-8.5 m<sup>2</sup> per litre

**Nitobond EP Slowset:** 15m<sup>2</sup> per 4 litre pack

**Concure WB80:** 3.5 to 5 m<sup>2</sup> per litre

## Limitations

Renderoc SPXtra should not be used when the ambient temperature is below 5°C and falling.

Renderoc SPXtra should not be part mixed, nor part bags used.

Renderoc SPXtra should not be exposed to running water either during application or prior to final set.

Water ponding is not recommended for curing.

## Storage

### Shelf life

If kept in a dry store in the original, unopened bags or packs, all products(except Nitoprime Zincrich (WB)) have a shelf life of 12 months, Nitoprime Zincrich (WB) has a shelf life of 6 months.



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## Storage conditions

Store in dry conditions in the original unopened containers.

If stored in conditions of high temperature and/or humidity, the shelf life may be reduced to as little as 4 months.

## Precautions

### Health and safety

Renderoc SPXtra contains cement powders which when mixed with water or upon becoming damp, release alkalis which can be harmful to the skin.

During use, avoid inhalation of the dust and contact with the skin or eyes. Wear suitable protective clothing - eye protection, gloves and respiratory equipment (particularly in confined spaces).

The use of barrier creams to provide additional skin protection is also advised. In case of contact with the skin, rinse with plenty of clean water, then cleanse thoroughly with soap and water.

In case of contact with eyes, rinse immediately with plenty of clean water and seek medical attention immediately - do not induce vomiting.

Nitoprime Zincrich(WB) and Nitobond EP Slowset should not come into contact with the skin or 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, eye protection and overalls. If working in a confined space, suitable respiratory equipment must be used.

The use of barrier creams will provide additional skin protection. In case of contact with the skin, rinse with plenty of clean water, then cleanse thoroughly with soap and water. In case of Nitoprime Zincrich(WB) and Nitobond EP Slowset, 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.

Concure WB80 is nontoxic. It is advisable to wear goggles when spraying. Inhalation of the spray should similarly be avoided. Should excessive skin contact with the compound occur the area of skin should be washed with soap and water and skin conditioning cream applied. If Concure WB80 comes into contact with the eyes they should be flushed with clean water for ten minutes. If any irritation persists, medical attention should be sought. If swallowed seek medical attention immediately - do not induce vomiting.

### Fire

Renderoc SPXtra, Nitobond EP Slowset and Concure WB80 are all non-flammable.

Nitoprime Zincrich (WB) mixture is non-flammable.

Nitoprime Zincrich (WB) powder is flammable. Keep away from water. Keep away from sources of ignition. In the event of fire, extinguish with CO<sub>2</sub> or foam. Do not use a water jet.

For further information see relevant Material Safety Data Sheet.

Renderoc is the trademark of Fosroc International Limited.



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