

# Renderoc S



## Single component structural grade polymer modified concrete reinstatement mortar

### Uses

For the reinstatement of large areas of concrete and for small, localised patch repairs. Renderoc S can also be used in combination with Nitobond EP bonding agent for trafficked repairs. Renderoc S is alkaline in nature and will protect embedded steel reinforcement. It is specifically designed for locations where high compressive strengths are required or in locations where good abrasion resistance is necessary.

### Advantages

- High strength and high abrasion resistance
- Can be applied by the wet or dry spray process for fast, exceptionally high build repairs with enhanced characteristics
- Extremely low permeability provides maximum protection against carbon dioxide and chlorides
- Excellent bond to the concrete substrate
- Shrinkage compensated
- Pre-bagged to overcome site-batched variations — only the site-addition of clean water required
- Contains no chloride admixtures

### Standards compliance

Renderoc S, Nitoprime Zincrich and Nitobond AR have been approved by the British Board of Agrément, Certificate No. 98/3461.

### Description

Renderoc S is supplied as a ready to use blend of dry powders requiring only the site addition of clean water to produce a highly consistent, high strength repair mortar. The material is polymer modified to provide a mortar with good handling characteristics, while minimising water demand. The hardened product exhibits excellent thermal compatibility with concrete and outstanding water repellent properties. The low water requirement ensures fast strength gain and long-term durability.

### Design criteria

Renderoc S is designed for vertical or horizontal use. It can be applied up to 10 mm thickness in vertical sections. Up to 100 mm thickness can be achieved in small pockets or by the use of formwork. In horizontal locations, Renderoc S can be applied up to 100 mm thickness. Thicker sections can be built up in layers. The material should not be applied at less than 5 mm thickness. Thicknesses greater than 10 mm in large areas can be achieved by spray application. Consult the local Fosroc office for further information. For horizontal trafficked locations individual areas should not exceed 4 m<sup>2</sup>.

### Properties

The following results were obtained at a water : powder ratio of 0.11 and temperature of 20°C.

Test method	Typical result
<b>Compressive strength</b> (BS 6319 Pt 2: 1983 — dry cure):	25 N/mm <sup>2</sup> @ 1 day 55 N/mm <sup>2</sup> @ 28 days
<b>Flexural strength</b> (BS 6319 Pt 3: 1983):	10 N/mm <sup>2</sup> @ 28 days
<b>Water absorption ISAT</b> (BS 1881 Pt 5: 1970) —	
10 minutes:	0.008 ml/m <sup>2</sup> /sec
2 hours:	< 0.005 ml/m <sup>2</sup> /sec
<b>Chloride diffusion</b> (Taywood Method):	11 x 10 <sup>-10</sup> cm <sup>2</sup> /sec
<b>Carbon dioxide barrier —</b> <b>Equivalent thickness of concrete</b> <b>to Renderoc S @ 10 mm</b> (Taywood Method):	250 mm
<b>Equivalent thickness of air to</b> <b>Renderoc S @ 10 mm</b> (Taywood Method):	70 metres
<b>Coefficient of thermal expansion:</b>	7 to 12 x 10 <sup>-6</sup> /°C
<b>Setting time (BS 5075) —</b>	
Initial set:	3 hours, 15 minutes
Final set:	4 hours, 30 minutes

<b>Fire rating (BS 476 Pt 4: 1970):</b>	Non-combustible (Class 0 surface)
<b>Fresh wet density:</b>	Approximately 2300 kg/m <sup>3</sup> dependent on actual consistency used
<b>Chemical resistance:</b>	The low permeability of Renderoc S severely retards chemical attack in aggressive environments. The cured mortar is highly impermeable to acid gases, chloride ions, oxygen and water

## Specification clauses

### Repair mortar

The polymer modified shrinkage-compensated reinstatement mortar shall be Renderoc S, 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 55 N/mm<sup>2</sup> compressive strength and 10 N/mm<sup>2</sup> flexural strength at 28 days. Chloride diffusion coefficient shall be not greater than  $11 \times 10^{-10}$  cm<sup>2</sup>/sec (by the Taywood Method) and a 10 mm section of cured mortar shall provide a carbon dioxide barrier equivalent to not less than 250 mm concrete or 70 metres air (by the Taywood Method).

## Application instructions

### Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 5 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 5 mm up to the sawn edge.

Ensure the surface is clean and free from contamination. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or abrasive-blasting.

The effectiveness of decontamination should be assessed by a pull-off test.

Fully expose 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.

### Reinforcing steel priming

Apply one full coat of Nitoprime Zincrich 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 saturated with clean water (removing residual surface water) prior to applying one coat of Nitobond AR primer and scrubbing it well into the surface. Under severe drying conditions repeated soaking may be necessary. Renderoc S can be applied as soon as the primer becomes tacky. If the Nitobond AR is too wet, vertical build up of the Renderoc S mortar may be difficult.

In all areas subject to trafficking or where a substrate/repair barrier is required or where the substrate is wet or likely to remain permanently damp, Nitobond EP\* bonding aid must be used. Contact the local Fosroc office for further information.

### Mixing

Care should be taken to ensure that Renderoc S is thoroughly mixed. A forced-action mixer is essential. For one pack quantities a suitably sized mixing vessel using a Renderoc 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.

For normal applications, place 2.5 to 3.0 litres of drinking quality water into the mixer and, with the machine in operation, add one full bag of Renderoc S and mix for a minimum of 3 minutes to a maximum of 5 minutes until homogeneous. Note that powder must always be added to water. Dependent on the ambient temperature and the desired consistency, a small additional amount of water may be added up to a maximum total water content of 3.0 litres per bag of Renderoc S.

### Mixing warning

Renderoc S may exhibit satisfactory handling characteristics even though inadequately mixed, resulting in significantly lower performance or failure. It is 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 avoid movement during the application process as this will affect mortar compaction, build and bond.

Apply the mixed Renderoc S to the prepared substrate by gloved hand or trowel. Thoroughly compact the mortar on to the primed substrate and around the reinforcement.

If sagging occurs during application, completely remove the affected section and re-apply at a reduced thickness on to the correctly reprimed substrate.

**Spray application**

Renderoc S can be applied by the wet or dry sprayed techniques. For enhanced compaction and bonding characteristics consult the local Fosroc office for further details.

**Finishing**

Renderoc S can be finished using a float or damp sponge to achieve the desired surface texture. The completed surface should not be overworked.

**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. The material should not be applied when the substrate and/or air temperature is below 5°C and falling.

**High temperature working**

At ambient temperatures above 35°C, the material should be stored in the shade and cool water used for mixing.

**Curing**

Renderoc S must be cured immediately after finishing with a continuous film of Nitobond AR. Large areas should be cured as trowelling progresses at 0.5 m<sup>2</sup> at a time. 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.

**Overcoating with protective decorative finishes**

Dekguard products may be applied over the repair area without prior removal of the Nitobond AR curing membrane. Other curing membranes must be removed prior to the application of Dekguard products.

**Cleaning**

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

**Limitations**

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 in any doubt consult the local Fosroc office.

**Estimating**

**Supply**

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<b>Renderoc S:</b>	25 kg bags
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**Coverage and yield**

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<b>Renderoc S:</b>	Approximately 12.0 litres / 25 kg bag (1.2 m <sup>2</sup> at 10 mm thickness)
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<b>Nitobond AR:</b>	4-6m <sup>2</sup> /litre
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Notes: The coverage figures quoted are theoretical — due to wastage factors, consistency and application method used. The yield will be reduced if the material is applied by a spray technique.

**Storage**

All products have a shelf life of 12 months if kept in a dry store in the original, unopened bags or packs.

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.

**Precautions**

**Health and safety**

Renderoc S 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. 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.

**Fire**

Renderoc S is non-flammable.

\* See separate data sheet.

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