

# Renderoc HBS

constructive solutions

Polymer modified structural concrete repair mortar

## Uses

For the reinstatement of reinforced concrete where low permeability characteristics and compressive strength is required. Renderoc HBS has been engineered for the repair of columns and beams but, is also suitable for soffit repairs.

## Advantages

- Maximum compatibility with concrete of compressive strength greater than 30 N/mm<sup>2</sup>
- High-build applications possible while maintaining higher compressive strengths — fewer cold joints
- Frequently can be applied without formwork
- Polymer-modification provides extremely low permeability
- System of shrinkage compensation provides long-term dimensional stability
- One component, pre-bagged to overcome site-batched variations
- Contains no chloride admixtures

## Description

Renderoc HBS concrete repair is a ready to use powder, requiring just the site addition of clean water to produce a medium weight mortar. It gives good handling properties with minimal water demand.

## Properties

The following results were obtained at a water : powder ratio of 0.15 and a temperature of 20°C unless otherwise stated.

Test method	Typical result
Compressive strength (BS 6319 Pt 2: 1983 - dry cure)	12 N/mm <sup>2</sup> @ 1 day 31 N/mm <sup>2</sup> @ 7 days 40 N/mm <sup>2</sup> @ 28 days
Flexural strength (BS 6319 Pt 3: 1990):	6.7 N/mm <sup>2</sup> @ 28 days
Tensile strength (BS 6319 Pt 7: 1985):	2.8 N/mm <sup>2</sup> @ 28 days
Modulus of elasticity in compression (BS 6319 Pt 6: 1984):	18.2 kN/mm <sup>2</sup> @ 28 days
Application build:	
Vertical:	40mm
Overhead:	30mm
Setting time (BS 4551 Pt14: 1980) -	
Initial set:	3 hours
Final set:	5 hours
Fresh wet density:	Approximately 1840 kg/m <sup>3</sup>
Chemical resistance:	Due to low permeability

Renderoc HBS can reduce the ingress of acid gases, water-borne chloride ions and oxygen

## Application instructions

### Preparation

Saw cut the edge of the repair to a depth of at least 10 mm. Break out the complete repair area to a minimum depth of 10 mm up to the sawn edge.

Clean the surface and remove any contamination. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or abrasive-blasting. Oil and grease deposits should be removed.

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. 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 Plus 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 to achieve a saturated surface dry state immediately before the application of the primer. Under severe drying conditions repeated soaking may be necessary. Apply one coat of Nitobond HAR primer, scrubbing well into the surface. Renderoc HBS can be applied as soon as the primer becomes tacky. If the Nitobond HAR is too wet, overhead and vertical build up of the Renderoc HBS mortar may be difficult.

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 should be used. Contact the local Fosroc office for further information.

### Mixing

Renderoc HBS must be thoroughly mixed using a forced-action mixer. Mixing in a drum using a Renderoc Spiral Paddle with a slow speed (400/500 rpm) heavy-duty drill is acceptable for the occasional one-bag mix. Free-fall mixers must not be used. Do not mix part bags.

For normal applications, place 3.75 to 4.0 litres of drinking quality water into the mixer. With the machine in operation, add one 25 kg bag of Renderoc HBS and mix for a minimum of 3 minutes to a maximum of 5 minutes. The powder must always be added to the water.

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As with other 'one pack' repair mortars, Renderoc HBS may exhibit satisfactory handling characteristics even though inadequately mixed. This will result in a significantly lower level of performance or possible failure.

## Application

Exposed steel reinforcing bars should be firmly secured to avoid movement during the application process as this will affect mortar performance.

Minimum applied thickness of Renderoc HBS is 10 mm.

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

If sagging occurs during application, the Renderoc HBS should be completely removed and reapplied at a reduced thickness on to the correctly reprimed substrate.

## Build-up

Additional build-up can be achieved by application of multiple layers. The surface of the intermediate layers should be comb scratch-keyed and cured with Nitobond AR. Repriming with Nitobond HAR and a further application of Renderoc HBS may proceed as soon as this layer has set.

## Spray application

Renderoc HBS can be quickly and efficiently applied by wet spray application. Where large areas of repair are required, the rapid placement and higher build attainable offer economic advantages. For further details contact the local Fosroc office.

## Finishing

Renderoc HBS is finished by striking off with a straight edge and closing with a steel float. Wooden or plastic floats, or damp sponges may be used to achieve the desired surface texture, do not overwork the surface.

## Extreme temperature working

In cold conditions down to 5°C, the use of warm mixing water (up to 30°C) is advisable. Normal precautions for winter working with cementitious materials should be adopted. The material must not be applied when the substrate and/or air temperature is 5°C and falling.

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

## Curing

Renderoc HBS must be cured with Nitobond AR applied by spray immediately following the finish of the repair.

Large areas should be cured as trowelling progresses (0.5 m<sup>2</sup> at a time).

In fast drying conditions, use wet hessian and polythene sheet as additional curing. In cold conditions, the finished repair must be protected from freezing.

## Overcoating with protective decorative finishes

Fosroc's Dekguard range of protective, anti-carbonation coatings can be applied over Renderoc HBS. These products provide a decorative and uniform appearance as well as protecting areas of the structure which might otherwise be at risk from the environment. Coatings 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

Nitobond HAR, Nitobond AR and Renderoc HBS should be removed from tools, etc. with clean water immediately after use. Cured material can only be removed mechanically.

Equipment used with Nitoprime Zincrich Plus and Nitobond EP should be cleaned immediately with Fosroc Solvent 102.

## Estimating

### Supply

Renderoc HBS:	25 kg bags
Nitoprime Zincrich Plus:	1.9 litre and 800 ml cans
Nitobond HAR:	5 and 25 litre drums
Nitobond AR:	5 and 25 litre drums
Fosroc Solvent 102:	5 and 25 litre tins

### Coverage and yield

Renderoc HBS:	Approx. 15.75 litres /25 kg bag (approx. 1.5 m <sup>2</sup> at 10 mm thickness)
Nitoprime Zincrich Plus:	8 m <sup>2</sup> / litre
Nitobond AR:	6 - 8 m <sup>2</sup> / litre
Nitobond HAR:	3 - 4 m <sup>2</sup> / litre

Actual yield per bag of Renderoc HBS will depend on the consistency used.

## Limitations

Renderoc HBS should not be used when the temperature is 5°C and falling. Do not mix part bags. Renderoc HBS should not be used in areas subjected to traffic (Renderoc S or Paveroc should be considered).

It should not be exposed to moving water or rainfall during application and prior to the final set. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.



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## Storage

Shelf life is 12 months from the date of manufacture if stored in the original, unopened bags.

Protect Nitobond HAR and Nitobond AR from frost.

## Precautions

### Health and safety

Please refer to appropriate Product Safety Data Sheet for further information.

### Fire

Renderoc HBS is non-flammable.

Nitoprime Zincrich Plus and Fosroc Solvent 102: 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

Nitoprime Zincrich Plus:	41°C
Fosroc Solvent 102:	33°C



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### Important note

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