Fosroc® Renderoc® HB

constructive solutions

General purpose, economical, patch repair mortar

Uses

For the reinstatement of large areas of concrete and for small, localised patch repairs. Renderoc HB is alkaline in nature and will protect embedded steel reinforcement. It is specifically designed for vertical and overhead high-build applications. The mortar is suitable where medium strength, as well as exceptional chloride and carbon dioxide resistance is required.

Advantages

- Lightweight formulation enabling extra high-build and thereby saving time and expense of multiple applications
- Reduces the need for formwork
- Can be applied by the wet-spray process for fast, exceptionally high-build repairs with enhanced strength
- Extremely low permeability provides maximum protection against carbon dioxide and chlorides
- Excellent bond to the concrete substrates
- Shrinkage compensated
- Pre-bagged to overcome site-batched variations - only the site addition of clean water required
- Contains no chloride admixtures
- RCS (Respirable Crystalline Silica) Hazard Free*

Description

Renderoc HB, a lightweight concrete repair mortar, 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, lightweight repair mortar. The material is based on Portland cement, graded aggregates, lightweight fillers and chemical additives and 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.

*Renderoc HB is classified not hazardous for RCS in accordance with Australian Inventory of Industrial Chemicals; contains <0.1% RCS.

Design Criteria

Renderoc HB has been engineered for the repair of columns and beams, but, because of its relatively low fresh wet density, can readily be used for vertical and overhead repair work. It can be applied in sections up to 80mm thickness in vertical locations and up to 50mm thickness in overhead locations in a single application and without the use of formwork. Thicker sections can be achieved by the use of formwork or can be built up in layers. Deep pockets can sometimes be filled in a single application dependent on the configuration of the pocket and the volume of exposed reinforcing steel.

Build can be dramatically increased by wet spraying. Typical achievable thicknesses are 70 - 150mm vertically and 70 - 100mm overhead, although this will depend on substrate profiles and the distribution of steel reinforcement. Consult your local Fosroc sales office for further information. The material should not be applied at less than 10mm thickness.

Where strengths below 30MPa and high build is required, Renderoc HB25 should also be used.

Application Instructions

Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 10mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 10mm 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.

Expose fully any corroded steel in the repair area and remove all loose scale and corrosion deposits 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.

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 soaked with clean water and any excess removed prior to applying one coat of Nitobond HAR primer and scrubbing it well into the surface. Renderoc HB 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 HB mortar may be difficult. Scrubbing by hand a thin layer of the Renderoc into the tacky primer will assist adhesion and also minimise the chance of the primer drying out. If the Nitobond HAR primer dries before the application of the Renderoc, the area must be re-primed before proceeding.

Note: Nitobond HAR primer is generally not required when wet spraying Renderoc HB. Refer to the separate information document “Wet Spraying Renderoc mortars”.

In exceptional circumstances, e.g. where a substrate/repair barrier is required or where the repair/substrate is likely to become immersed, permanently wet or damp subsequent to the completion and cure of the repair, Nitobond EP bonding aid should be used. Refer to the Nitobond EP data sheet

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Properties

The following results were obtained at a water:powder ratio of 0.18 and temperature of 20°C unless otherwise stated.

Test method	Standard	Test result	
Compressive Strength	AS 1478.2 – 2005	10 MPa @ 1 day 12 MPa @ 3 days 20 MPa @ 7 days 28 MPa @ 28 days	
Modulus of elasticity in compression	AS1012.17: 1997	1.30 x 1^{04} MPa	
Chloride Diffusion	Nordtest NT Build 443	1.45 x 10^{-12} /sec	
Flexural Strength	AS1012.11 – 2000	3.9 MPa @ 28 days	
Tensile Strength	AS1012.10 - 2000	2.2 MPa @ 28 days	
Setting Time	AS1012.18 - 1996	Initial Set : 2 hours Final Set : 5 hours	
Fresh Wet Density		1400 kg/m³	
VOC content:	ASTM D3960-5	10g / litre	
Alkali reactive particles	RTA Rapid Mortar Bar Test RTA T363	<0.1% (Non-Reactive)	
Build Characteristics achievable in a single layer **Overhead** **Vertical**		Hand/Trowel up to 50mm up to 80mm	Wet Spray 150-200mm 175-250mm

Clarification of property values: The typical properties given above are derived from laboratory testing. Results derived from field applied. Samples may vary.

Mixing

Care should be taken to ensure that Renderoc HB is thoroughly mixed. A forced-action mixer is essential. Mixing at a slow speed (400/500 rpm) in a suitably sized drum using appropriate equipment such as a 120/140mm helical mixing paddle fitted to a heavy-duty 1600W mixer or equivalent is acceptable for one-bag mixes.

Free-fall mixers must not be used.

Place 3.45 - 3.60 litres of drinking quality water into the mixer and, with the machine in operation, add one full 20kg bag of Renderoc HB and mix for 3 to 5 minutes until fully homogeneous. 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 3.6 litres per 20kg bag of Renderoc HB.

Note: In all cases Renderoc HB powder must be added to water.

Mixing part bags

It is recommended that full bags be mixed, however for applications where smaller quantities of product are required, experienced applicators may elect to mix half bags by weighing out 10kg and mixing with half the recommended quantity of water. In doing so the contractor accepts the risk of any off-ratio mixing. Agitate the dry product before weighing out to minimise any segregation. Reliable scales should be used to weigh out individual components.

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 HB to the prepared substrate by gloved hand or trowel. First, work a thin layer of the mortar into the primer and then build the mortar on to this layer. Thoroughly compact the mortar on to the primed substrate and around the exposed reinforcement.

Renderoc HB can be applied in sections up to 80mm thickness in vertical locations and up to 50mm thickness in overhead locations in a single application and without the use of formwork. Thicker sections should be built up in layers but are sometimes possible in a single application depending on the actual configuration of the repair area and the volume of exposed reinforcing steel.

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

Note: the minimum applied thickness of Renderoc HB is 10mm.

Build-up

Additional build-up can be achieved by application of multiple layers. The final thickness is dependent on the material consistency and substrate profile.

The surface of the intermediate layers should be scratch- keyed and cured with Nitobond AR. Repriming with Nitobond HAR and a further application of Renderoc HB may proceed as soon as this layer has set.

Spray application

Renderoc HB can be quickly and efficiently applied by the wet spray technique. In circumstances where large areas of repair are required, the rapid placement and higher build attainable by this method offer economic advantages over hand-trowelling. The resultant repair also offers a generally more dense compound with enhanced mortar/substrate bond characteristics. For further details on the wet spray technique, including selection of spraying machines and nozzles, consult the document "Wet Spraying Renderoc mortars" or contact Fosroc.

Note: Nitobond HAR primer is generally not required when wet spraying Renderoc HB. Refer to the separate information document "Wet Spraying Renderoc mortars".

Finishing

Renderoc HB is finished by striking off with a straight edge and closing with a steel trowel. Wooden or plastic floats, or damp sponges may be used to achieve desired surface texture. The completed surface should not be overworked. Allow the applied Renderoc to stiffen before attempting to finish off - this will minimise slumping. After spray application, the mortar may need to be 'cut back' to the required profile using a steel trowel and then finished with damp sponges as described above.

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 failing. At 5°C static temperature or at 5°C and rising, the application may proceed.

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 HB is a cement-based repair mortar. In common with all cementitious materials, Renderoc HB must be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR or Concure A99, sprayed on to the surface of the finished Renderoc in a continuous film, is recommended.

Large areas should be cured as trowelling progresses (0.5m^2 at a time) without waiting for completion of the entire area. 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

Renderoc HB is extremely durable and will provide excellent protection to the embedded steel reinforcement within the repaired locations. The surrounding parts of the structure will generally benefit from the application of a protective barrier/ decorative coating to limit the advance of chlorides and carbon dioxide, thus bringing them up to the same protective standard as the repair itself. Fosroc recommends the use of the Dekguard range of protective, anti-carbonation coatings. 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. Dekguard products may be applied over the repair area following the removal of **any** curing membranes prior to the application of Dekguard system to allow penetration of the silane primers.

Cleaning

Nitobond HAR, Nitobond AR and Renderoc HB 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 10.

Limitations

Renderoc HB should not be used when the temperature is below 5°C and failing. Due to the lightweight nature of Renderoc HB, the product should not be used in areas subjected to traffic. Neither should it 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, contact Fosroc.

NOTE: Renderoc HB is not designed to be used as a broad-scale building render.

Supply

Renderoc HB 20kg:	FC306095-20KG
Nitoprime Zincrich 1 litre:	FC322100-1L
Nitobond AR 5 litre:	FC320015-5L
Nitobond AR 20 litre:	FC320015-20L
Nitobond HAR 1 litre:	FC322070-1L
Nitobond HAR 5 litre:	FC322070-5L
Nitobond HAR 20 litre:	FC322070-20L
Nitobond EP base 1.5 litre pack:	FC321025-1L
Nitobond EP hdnr 1.5 litre pack:	FC321026-500ML
Nitobond EP base 6 litre pack:	FC321025-4L
Nitobond EP hdnr 6 litre pack:	FC321026-2L
Fosroc Solvent 10 4 litre:	FC600800-4L
Fosroc Solvent 10 20 litre:	FC600800-20L

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Coverage and yield

Renderoc HB 20kg:	16.1 - 16.6 litres / 20 kg bag (approx. 1.6m^2 at 10mm thick)
Nitoprime Zincrich:	8 m²/litre
Nitobond AR:	6 - 8 m²/litre (as curing)
Nitobond HAR:	3 - 4 m²/litre
Nitobond EP:	4 - 5 m²/litre

Note: the actual yield per bag of Renderoc HB will depend on the consistency used. The yield will be reduced if the material is applied by a spray technique. 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

Renderoc HB has a shelf life of 36 months from date of manufacture if kept in the original, unopened bags. Do not use if there are lumps in the product, or a loss of workability (requiring more water to be added) is experienced.

If stored at high temperatures and/or high humidity conditions the shelf life may be reduced.

Nitobond HAR and Nitobond AR should be protected from frost.

Important notice

A Safety Data Sheet (SDS) is available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

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