



Specialist Construction Supplies for Repair, Maintenance, Building & Infrastructure

Renderoc HB25 Data Sheet

Specification notes

Product: **Renderoc HB25**

Supplier:

Arcon Construction Supplies
19-20 Prestwood Court
Leacroft Road
Warrington
WA3 6SB

Tel: **01925 852225**

Email: mail@arconsupplies.co.uk

Web: www.arconsupplies.co.uk

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Renderoc HB25



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Renderoc HB25
CI/SfB: (4-) Pr4 w7
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High performance lightweight concrete reinstatement mortar

Uses

For the reinstatement of large areas of concrete where low permeability characteristics are required but where high compressive strength is not the most important consideration. Renderoc HB25 has been specifically engineered for vertical and overhead repair work where its lightweight nature makes it ideal. The mortar can also be used for small, localised patch repairs.

Where higher compressive strengths are required as well as low permeability characteristics, Renderoc HB40 should be used.

Advantages

- Maximum compatibility with concrete of compressive strength greater than 15 N/mm²
- Lightweight formulation enables extra high-build — fewer cold joints
- Frequently obviates the need for formwork
- Polymer-modification provides extremely low permeability to water, carbon dioxide and chlorides
- Exceptional system of shrinkage compensation provides long-term dimensional stability
- Can be applied quickly and efficiently by wet spraying
- One component, pre-bagged to overcome site-batched variations
- Contains no chloride admixtures
- Renderoc Galvashield XP compatible

Standards compliance

Renderoc HB25 has been approved by the British Board of Agrément, Certificate No. 98/3461.

Renderoc HB25 has been tested and approved in accordance with the Hong Kong Housing Authority Specification TM1 to TM8 (1990).

Renderoc HB25 used in conjunction with Nitobond SBR slurry primer complies with the requirements of the Water Regulations Advisory Service.

Description

Renderoc HB25 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.

It is based on Portland cements, graded aggregates, lightweight fillers and chemical additives which provide a mortar with good handling characteristics while minimising water demand. The low water requirement ensures good strength gain and long-term durability.

Design criteria

Renderoc HB25 has been specifically engineered for vertical and overhead repair work. It can be applied in sections up to 80 mm thickness in vertical locations and up to 60 mm 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 175 to 250 mm vertically and 150 to 200 mm overhead, although this will depend on substrate profiles and the distribution of steel reinforcement. Consult the local Fosroc office for further information.

The material should not be applied at less than 10 mm thickness.

Properties

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

Test method	Typical result
Compressive strength	
(BS 6319 Pt 2: 1983 - dry cure):	7 N/mm ² @ 1 day
	19 N/mm ² @ 7 days
	23 N/mm ² @ 28 days
Flexural strength	
(BS 6319 Pt 3: 1990):	4.3 N/mm ² @ 28 days
Tensile strength	
(BS 6319 Pt 7: 1985):	1.8 N/mm ² @ 28 days

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Modulus of elasticity in compression

(BS 6319 Pt 6: 1984): 10.5 kN/mm² @ 28 days

Water absorption ISAT (BS 1881 Pt 5: 1970) —

10 minutes: 0.023 ml/m²/sec

2 hours: 0.004 ml/m²/sec

Drying shrinkage

27°C/RH 55%: < 300 microstrain @ 7 days

Carbon dioxide barrier — equivalent thickness of concrete to Renderoc HB25

@ 10 mm (Taywood method): 300 mm

Chloride diffusion —Taywood bulk diffusion test

(accelerated): < 5 x 10⁻¹³ m² s⁻¹
(low permeability concrete
defined as < 1 x 10⁻¹² m² s⁻¹
by non-accelerated testing)

Coefficient of thermal

expansion: 8.3 x 10⁻⁶/°C

Setting time (BS 4551 Pt 14: 1980) —

Initial set: 3 hours

Final set: 5½ hours

Fire rating (BS 476 Pt 4: 1970): Non-combustible
(Class 0 surface)

Fresh wet density: Approximately 1400 kg/m³
dependent on actual
consistency used

Chemical resistance: The low permeability of
Renderoc HB25 severely
retards chemical attack in
aggressive environments.
The cured mortar is highly
impermeable to acid gases,
water-borne chloride ions,
and oxygen

Application instructions

Preparation

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.

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 abrasive-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. 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 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 saturated surface dry immediately before the application of the primer i.e. it should be thoroughly saturated with clean water and any residual surface water removed prior to applying one coat of Nitobond HAR primer and scrubbing it well into the surface. Under severe drying conditions repeated soaking may be necessary to ensure the substrate is still saturated at the time of application of the primer. Renderoc HB25 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 HB25 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 bonding aid should be used. Contact the local Fosroc office for further information.

Mixing

Care should be taken to ensure that Renderoc HB25 is thoroughly mixed. A forced-action mixer is essential. Mixing in a suitably sized drum using an approved Renderoc Spiral Paddle in a slow speed (400/500 rpm) heavy-duty drill is acceptable for the occasional one-bag mix.

Free-fall mixers must not be used. Mixing of part bags should never be attempted.

For normal applications, place 3.1 to 3.4 litres of drinking quality water into the mixer.



With the machine in operation, add one full 18 kg bag of Renderoc HB25 and mix for a minimum of 3 minutes to a maximum of 5 minutes until fully homogeneous.

Note that the powder must always be added to the water.

Mixing warning

As with other 'one pack' repair mortars, Renderoc HB25 may exhibit satisfactory handling characteristics even though inadequately mixed. This will result in a significantly lower level of performance or possible failure. It is therefore 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 HB25 to the prepared substrate by gloved hand or trowel. Thoroughly compact the mortar on to the primed substrate and around the exposed reinforcement. Renderoc HB25 can be applied in sections up to 80 mm thickness in vertical locations and up to 60 mm 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 dependent on the actual configuration of the repair area and the volume of exposed reinforcing steel. Thicker applications can always be achieved by spray application — see below.

If sagging occurs during application, the Renderoc HB25 should be completely removed and reapplied at a reduced thickness on to the correctly reprimed substrate.

Note: the minimum applied thickness of Renderoc HB25 is 10 mm.

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 comb scratch-keyed and cured with Nitobond AR. Repriming with Nitobond HAR and a further application of Renderoc HB25 may proceed as soon as this layer has set.

Spray application

Renderoc HB25 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 wet spray techniques contact the local Fosroc office.

Finishing

Renderoc HB25 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. The completed surface should not be overworked. After spray application, the mortar may need to be 'cut back' to the required profile using a steel float and then finished with damp sponges as described above.

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

Curing

Renderoc HB25 is a cement-based repair mortar. In common with all cementitious materials, it must be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR, sprayed on to the surface of the finished mortar in a continuous film, is recommended. A low pressure atomising sprayer is essential for applying the Nitobond AR. Any excessive run-off on verticals or drips on soffits should be removed by brush before they harden.

Large areas should be cured as trowelling progresses (0.5 m² 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 HB25 is extremely durable and will provide long-term protection to the embedded steel reinforcement within the repaired locations. The surrounding parts of the structure will generally benefit from the application of a 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 recommend 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 without prior removal of the Nitobond AR curing membrane. Other curing membranes must be removed prior to the application of Dekguard products.

Cleaning

Renderoc HB25 should be removed from tools, equipment and mixers with clean water immediately after use. Cured material can only be removed mechanically.

Limitations

Renderoc HB25 should not be used when the temperature is below 5°C and falling. Do not mix part bags. Due to the lightweight nature of Renderoc HB25, the product should not be used in areas subjected to traffic (in these circumstances, Renderoc S should be considered). 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, consult the local Fosroc office.

Estimating

Supply

Renderoc HB25: 18 kg bags

Coverage and yield

Renderoc HB25: Approximately 15.0 litres / 18 kg bag (approximately 1.5 m² at 10 mm thickness)

Notes: the actual yield per bag of Renderoc HB25 will depend on the consistency used. The yield will be reduced if the material is applied by a spray technique.

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 shelf life may be reduced to 4 to 6 months.

Precautions

Health and safety

Renderoc HB25 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 dust mask. The use of barrier creams provide additional skin protection. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water.

For further information see Product Safety Data Sheets.

Fire

Renderoc HB25 is non-flammable.

* See separate data sheet.

Renderoc is the trade mark of Fosroc International Limited



Fosroc Limited

Coleshill Road
Tamworth
Staffordshire B78 3TL
Tel 01827 262222
Fax 01827 262444
www.FosrocUK.com

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