

Renderoc HB40



constructive solutions

High-technology medium-weight concrete reinstatement mortar

Uses

For the reinstatement of large areas of concrete and for small, localised patch repairs. **Renderoc HB40** is alkaline in nature and will protect embedded steel reinforcement. It is specifically designed for vertical and overhead repair work.

Advantages

- Medium weight formulation enabling high build and thereby saving time and expense of multiple applications
- Obviates the need for formwork
- Polymer-modification provides extremely low permeability to water, carbon dioxide and chlorides
- Excellent bond to the concrete substrate
- Exceptional system of shrinkage compensation
- One component, pre-bagged to overcome site-batched variations
- Contains no chloride admixtures

Standards compliance

Renderoc HB40 has been tested and approved in accordance with the Hong Kong Housing Authority Specification TM1 to TM8 (1990).

Description

Fosroc **Renderoc HB40** 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, medium weight repair mortar. The material 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 fast strength gain and long-term durability.

Technical support

Fosroc offers a comprehensive range of high performance, high quality construction products. In addition, Fosroc offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the world.

Design criteria

Renderoc HB40 can be applied in sections up to 40 mm thickness in vertical locations and up to 30 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 depending on the actual configuration of the repair area and the volume of exposed reinforcing steel. The material should not be applied at less than 10 mm thickness. Greater thicknesses than those specified above can be achieved by spray application or by the use of formwork. Consult the local Fosroc office for further information.

Properties

The test methods used were in full accordance with the Hong Kong Housing Authority Specification TM1 to TM8 (1990). Specimens were stored at 27°C and 55% RH. The physical properties below are typical of the results obtained in practice.

Test Method	Description of Test	Typical Result
TM1	Compressive strength	28-33 MPa @ 7 days 35-40 MPa @ 28 days
TM2	Flexural strength	< 5 MPa @ 7 days
TM3	Tensile strength	< 2 MPa @ 7 days
TM4	Elastic modulus	15-25 kN/mm ² @ 28 days
TM5	Bond strength	< 2 MPa @ 7 days
TM6	Shrinkage - Coutinho Ring	No cracks @ 7 days No cracks @ 28 days
TM7	Figg air permeability	< 250 seec @ 35 days
TM8	Drying shrinkage	< 300 microstrains @ 7 days

Notes:

(i) The specimens were stored in full accordance with the Hong Kong Housing Authority Specification (1990);

(ii) TM1 to TM5 are based on BS6319 Part 2, Part 6 and Part 7.

Fresh wet density: approximately 1840 kg/m³ depending on actual consistency used.

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

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Specification clauses

The polymer modified reinstatement mortar shall be **Renderoc HB40**, a single component cement-based blend of powders to which only the site-addition of clean water shall be permitted. The reinstatement mortar shall comply fully with the Hong Kong Housing Authority Specification TM1 to TM8 and shall exhibit a fresh wet density of 1840 kg/m³.

Application instructions

Preparation

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 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 (any excess being removed prior to commencement) prior to applying one coat of **Nitobond SBR**/cement slurry 1:1 by volume. The bond coat should be scrubbed into the surface of the concrete. Avoid applying too thickly. The repair mortar should be applied as soon as the bond coat becomes 'tacky'. If the bond coat is too wet, achieving the desired build may be difficult. If the bond coat becomes dry, build and bond will be reduced. If a Nitobond SBR/cement slurry coat dries before application of the repair mortar, it must be removed and the area reprimed before continuing.

In exceptional circumstances, for example, where a substrate/repair barrier is required or where the substrate

is 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 HB40** is thoroughly mixed. A forced-action mixer is essential. Mixing in a suitably sized drum using an approved spiral paddle in a slow speed (400/500 rpm) heavy-duty drill is an acceptable alternative. Mixing of part bags should never be attempted.

For normal applications, place 3.8 to 4.0 litres of clean water into the mixer and, with the machine in operation, add one full 25 kg bag of **Renderoc HB40** and mix for 3 to 5 minutes until fully homogeneous. Note that powder must always be added to water.

Application

For application to all surfaces, **Renderoc HB40** must be well-compacted on to the primed substrate by trowel or by gloved hand. Exposed steel reinforcement should be completely encapsulated by the mortar. **Renderoc HB40** can be applied at a minimum thickness of 10 mm and up to 40 mm thickness in vertical locations in a single application and without the use of formwork. Overhead thicknesses between 10 mm and 30 mm can be made in a single application, depending on the nature of the substrate and the details of the location. If the recommended thicknesses are exceeded and sagging occurs, the affected section must be completely removed and reapplied in accordance with the procedure described above. Greater thicknesses than those specified above can be achieved by spray application or by the use of formwork.

Where thicker sections are required by hand or trowel application, the surface of the intermediate layers should be scratch-keyed and cured with **Nitobond AR**. Application of a further bond coat and a further application of **Renderoc HB40** may proceed as soon as this layer has set.

Finishing

Renderoc HB40 can be finished with a steel, plastic or wood float, or by a damp sponge technique, to achieve the desired surface texture. The completed surface should not be overworked.



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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.

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 HB40 is a cement-based repair mortar. In common with all cementitious materials, **Renderoc HB40** 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 **Renderoc** in a continuous film, is recommended. In harsh drying conditions, supplementary curing such as wet hessian and/or polythene sheeting must be used.

Overcoating

The completed area of the repair can be overcoated generally after 24 hours. Fosroc Expandite recommend the use of the **Dekguard** range of protective, anti-carbonation coatings. These products also provide a decorative and uniform appearance as well as protecting other 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.

Limitations

Renderoc HB40 should not be used when the temperature is below 5°C and falling. Do not mix part bags. Due to the medium weight nature of **Renderoc HB40**, the product should not be used in areas subject to traffic. Exposure to heavy rainfall prior to the final set may result in surface scour.

Estimating

Supply

Renderoc HB40	25 kg bag
Nitoprime Zincrich	1 litre can
Nitobond SBR	20 litre drums
Nitobond AR	20 litre pail
Nitobond EP	4.5 kg pack

Coverage and yield

Renderoc HB40	approximately 15.75 litres/25 kg bag
Nitoprime Zincrich	2 to 5 m ² /litre
Nitobond SBR	2 to 3 m ² /litre (diluted as slurry bond coat)
Nitobond AR	6 to 8 m ² /litre
Nitobond EP	10 to 11.5 m ² /pack

Notes: the actual yield per bag of **Renderoc HB40** will depend on the consistency used. 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.

UN packaging regulations

To comply with current regulations, all products of a hazardous nature which are subjected to a sea crossing as part of their delivery requirements, must be packed in UN approved receptacles.

When a known sea crossing is involved, whether locally or for export, Fosroc Expandite will supply in the correct UN packaging. Where Fosroc Expandite are requested to deliver within a mainland boundary but the Purchaser intends to onward ship, it is incumbent upon the Purchaser to specify that UN packaging is required at the time of placing the order. Otherwise, once received, responsibility rests with the Purchaser. The use of UN packaging may affect the selling price of products. Please consult the local Fosroc office.

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. **Nitobond SBR** and **Nitobond AR** should be protected from frost.



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Precautions - health and safety

Renderoc HB40 contains cement powders which, during normal use, have no harmful effect on dry skin. However, when Renderoc HB40 is mixed, or becomes damp, alkali is released which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes. Nitoprime Zincrich and Nitobond products should not be allowed to come into contact with skin or eyes or be swallowed.

Wear suitable gloves, eye protection and dust masks. The use of barrier creams is recommended. In case of contact with skin, wash with clean 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 HB40, Nitobond SBR and Nitobond AR are non-flammable. Nitobond EP is flammable.

Flash points

Nitoprime Zincrich 16°C

Additional information

Fosroc manufactures a wide range of products specifically designed for the repair and refurbishment of damaged reinforced concrete.



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Important note

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