Renderoc® HB2

FOSROC constructive solutions

Two component high build polymer modified cementitious reinstatement mortar

Uses

Renderoc HB2 is a cementitious repair compound which is used to reinstate damaged and deteriorated concrete. This product is suitable where above average chloride and carbon-dioxide resistance is required. Due to the light weight nature of the product Renderoc HB2 is recommended for high build repair to reinforced concrete in vertical or overhead situations where thicknesses of upto 40mm vertically or 25mm overhead can be achieved in a single application.

Advantages

- In vertical and overhead situations, a high thickness can be built up.
- Extremely low permeability provides maximum protection against carbon dioxide and chlorides.
- Excellent bond to the concrete substrate
- Shrinkage compensated
- Only addition of water at site to be made while mixing the powder and liquid parts
- Contains no chloride admixtures

Description

Renderoc HB2 is a light weight, cementitious, polymer modified repair mortar to provide high build properties as well as excellent resistance to chloride ions and the diffusion of acidic gases such as carbon dioxide. It contains special preblended cements, graded sands and chemical additives which thermally combine to provide a product that has excellent compatibility with concrete as well as outstanding water repellent properties. Renderoc HB2 can be applied in thicknesses from 10mm to 40mm in vertical and 25mm in overhead situations.

Technical support

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

Design criteria

Renderoc HB2 is designed for vertical or horizontal application use. It can be applied from a minimum of 5mm to 15mm thickness in vertical sections. Higher thicknesses can be achieved by the use of form work. Thicker sections can be built up in layers. In horizontal locations Renderoc HB2 can be applied up to 50mm thickness. The material should not be applied at less than 5mm thickness. Consult Fosroc for further information.

Properties

The following results were obtained at a Water:Powder ratio of 0.18 and temperature @ 20^{0}C.

Compressive strength (N/mm^2)

1 D	3 D	7 D	28 D
7	12	16	20

Tensile strength	1.7N/mm^2 @ 28 days
Flexural strength	4.5N/mm^2 @ 28 days
Water absorption ISAT (BS 1881 Pt.5 1970)	
10 min	0.01/ml/m^2/Sec
2 hours	0.005 ml/m^2/Sec
Carbon dioxide barrier Equivalent thickness of concrete at 20mm thickness (Taywood method)	Greater than 100mm
Coefficient of thermal expansion	7 - 12 x 10^{-6}/^{0}C
Setting time (BS 4551 Pt 14 : 1980)	
Initial set	2 hours
Final set	5 hours
Fresh wet density	Approx. 1600kg/m^3 dependent on actual consistency used

Specification clauses

Preparation

The area to be repaired shall be saw cut 10mm depth and broken out to a minimum of 10mm to provide a defined repair area. Feathered edges will not be accepted. It is essential that no contaminated or carbonated concrete shall be in contact with the reinforcing bars. The concrete shall be broken out to expose the full circumference of the reinforcing bars if they are within the contaminated area of the substrate.

Priming

The prepared steel be primed with a full coat of Nitozinc Primer within 2 hours of cleaning. The concrete substrate shall be thoroughly soaked with clean water prior to priming. The bonding agent shall be Nitobond HAR and shall be well worked in to the substrate. The repair compound shall be applied whilst the Nitobond HAR is tacky.

Repair material

The area to be reinstated shall be repaired with Renderoc HB2. The material shall be mixed with the specified amount of water and applied strictly in accordance with the manufacturer's instructions. Note that only full bags of Renderoc HB2 shall be mixed. The repair shall be cured in accordance with the manufacturer's requirements.

Application instructions

Surface preparation

Clean the surface and remove any dust, unsound material, plaster, oil, grease, corrosion deposits or algae. Roughen the surface and remove any laitance by light scrabbing or grit blasting. Saw cut or cut back the extremities of the repairs to a depth of atleast 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 saw edge.

Oils and grease deposits should be removed by steam cleaning, detergent scrubbing or by 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. Grit blasting is recommended.

Reinforcing steel priming

Apply one full coat of Nitozinc Primer and allow to dry before continuing (approx. 1 - 2 hrs at 30^0C).

Concrete / Masonry Priming

The substrate should be thoroughly soaked with water (any excess being removed) prior to applying one coat of Nitobond HAR and scrubbing it well into the surface. Renderoc HB2 can be applied as soon as the Nitobond HAR become tacky. (If Nitobond HAR is too wet built up of the Renderoc HB2 in overhead or vertical situations may be difficult).

In exceptional circumstances, e.g. where a substrate/ repair barrier is required, or where the substrate is liable to remain permanently damp, Nitobond EP should be used. For further details, Fosroc should be consulted.

Mixing

Care should be taken to ensure that Renderoc HB2 is thoroughly mixed. A forced action mixer is essential. Mixing in a suitably sized drum using a paddle in a slow speed (400/500 rpm) drill is an acceptable alternative. Mixing of part bags should never be attempted.

For 1 bag mix :

Place about 2.75 litres of drinking quality water in the mixer and, add the supplied liquid polymer part and mix with the machine in operation, add Renderoc HB2 powder and mix for 2 to 3 minutes. Depending 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 3.25 litres.

Application

Apply the mixed Renderoc HB2 to the prepared substrate with a gloved hand or trowel. First work a mini layer of the mortar on to the layer.

Thoroughly compact the mortar on to primed substrate and around the reinforcement.

Build up

Additional build up on overhead can be achieved by application of multiple layers and final thickness is dependent on the material consistency and substrate profile. Exposed steel reinforcing bars should be secured to avoid movement during the application process as this can affect mortar compaction and build.

Where thicker sections are required, the surface of the intermediate layer should be scratch keyed and cured with Nitobond AR. Repriming with Nitobond HAR and further application of Renderoc HB2 may proceed as soon as this layer has set.

The minimum applied final thickness of Renderoc HB2 is 10mm.

If sagging occurs, the Renderoc HB2 should be completely removed and reapplied at a reduced thickness on to the correctly primed substrate.

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Finishing

Renderoc HB2 is finished by striking off with a straight edge and closing with a steel float. Wooden or plastic floats or sponges may be used to provide different surface textures.

Curing

A gap of 20mm shall be allowed behind the reinforcing bars. The final substrate shall be clean and sound. Corroded reinforcement shall be mechanically cleaned to bright steel condition.

Renderoc HB2 requires curing immediately after completion of trowelling. Large areas should be cured as trowelling progresses (0.5m^2 at time) without waiting for completion of the whole area. In fast drying conditions, it may be necessary to supplement this with polythene sheet taped down around the edges. When using in cold climates the finished repair must be protected from freezing.

Overcoating with protective decorative finishes

As part of the Fosroc concrete repair and protection system, Renderoc HB2 is extremely durable and will provide excellent protection to the embedded steel reinforcement in the repaired areas. The existing sound parts of the structure will benefit from the application of a barrier/decorative coating to limit the advance of the carbonation front, prevent chloride ingress and bring them upto the same protective standard as the repair. The Dekguard range of coatings is designed to achieve this and may be applied. Separate datasheets on this range are available.

Cleaning

Renderoc HB2 should be removed from tools and mixers with clean water immediately after use. Cured material can be removed mechanically only.

Equipment used with Nitozinc Primer and Nitobond EP should be cleaned with Nitoflor Sol.

Storage

Shelf Life

All products have a shelf life of 6 months if kept in unopened packs in a dry store. If stored in permanent high humidity locations, the shelf life may be reduced . Nitobond AR and Nitobond HAR should be protected from frost.

Estimating

Packaging and Coverage

Product	Packing	Theoretical coverage
Renderoc HB2	18 kg bag and 0.54 kg liquid polymer	1.3 m^2 at 10mm thickness
Nitobond HAR	5 litre Can	3 -4 m^2 / litre
Nitobond EP	1& 4 Litre	2.5m^2/litre
Nitozinc Primer	5 litre Can	5 m^2 / litre
Nitoflor Sol	5 litre Can	-

The coverage figures for liquid products are theoretical. Due to wastage factors and the variety and nature of possible substrates, practical coverage figures may be reduced.

Precautions

Health & Safety

Renderoc HB2 contains cementitious powders which during normal use have no harmful effect on dry skin. However when Renderoc HB2 is mixed or becomes damp, alkali is released which can be harmful to the skin.

During use

- Avoid inhalation of dust
- Avoid contact with skin and eyes
- Wear suitable gloves and eye protection
- Incase of contact with skin, wash with water
- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Nitobond bonding agents, Nitozinc Primer, and Nitoflor Sol should not be allowed to come into contact with skin or eyes or be swallowed.

The use of protective clothing, goggles, gloves and barrier creams is recommended.

If contact with skin or eyes occurs wash thoroughly with clean water. If irritation persists seek medical attention immediately.

If swallowed, seek medical attention immediately. do not induce vomiting.

Renderoc HB2, Nitobond HAR and Nitobond AR are non-flammable.

Flash points

Nitobond HAR	N/A
Nitobond EP	N/A
Nitozinc Primer	20^{0}C
Nitoflor Sol	33^{0}C

Additional information

Renderoc HB2 is one of a wide range of products for the repair and protection of damaged reinforcing concrete. Other products in the Renderoc range include heavy duty and fluid cementitious repair compounds as well as Nitomortar chemical resistant epoxy resin mortars. In addition, Fosroc manufactures a comprehensive range of Dekguard decorative and anti-carbonation coating.

All products are described in greater detail in individual technical datasheets.

Important note :
Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

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