



constructive solutions

Renderoc GP

Single component medium-weight concrete and masonry reinstatement mortar for use in hot climates

Uses

Renderoc GP is suitable for a wide range of concrete and masonry repairs, particularly in vertical and overhead locations without the use of formwork. The mortar is suitable for all types of patch repair. The mortar is suitable where superior chloride and carbon dioxide resistance is required.

Advantages

- High build achievable without formwork - saving time and expense of multiple applicators
- Low permeability provides good protection against carbon dioxide and chlorides
- Excellent bond to the concrete substrate
- Shrinkage compensated
- Contains no chloride admixtures

Description

Renderoc GP 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 for general purpose concrete and masonry repairs. The material is based on Portland cement, graded aggregates, special fillers and chemical additives, modified by anti-desiccation additives, to provide a mortar suitable for use in all climates. It maintains good handling characteristics while minimising water demand. The product exhibits excellent thermal compatibility with concrete. 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 service to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the world.

Design Criteria

Renderoc GP is designed for vertical, overhead or horizontal use without the use of formwork. It can be applied up to 20 mm thickness in large sections overhead and up to 50 mm thickness in large vertical sections. Up to 100 mm thickness can be achieved in small pockets or by the use of formwork.

In horizontal locations, Renderoc GP can be built up in layers using a wet-on-wet technique. The material should not be applied at less than 10 mm thickness.

Typical properties

The following typical results were obtained at a water:powder ratio of 0.18.

Test

method	Test Description	Typical result
TM1	Compressive Strength	35 N/mm ² @ 7 days 45 N/mm ² @ 28 days
TM2	Flexural Strength	7 N/mm ² @ 7 days
TM3	Tensile Strength	2.5 N/mm ² @ 7 days
TM4	Elastic modulus	17 kN/mm ² @ 28 days
TM5	Bond Strength	2 N/mm ² @ 7 days
TM6	Shrinkage-Coutinho Ring	No cracks @ 7 days No cracks @ 28 days
TM7	Figg air permeability	400 secs @ 35 days
TM8	Drying shrinkage	400 microstrains @ 7 days
BS1881: Part 208: 1996	Initial Surface Absorption of concrete (ISAT)	0.035 ml/m ² /s 10 mins 0.01ml/m ² /s 30 mins 0.005 ml/m ² /s 60 mins
BS6319: Part 4: 1983	Slant shear bond strength to concrete	25 N/mm ² @ 28 days
-	Coefficient of thermal expansion	7 to 12 x 10 ⁻⁶ /°C
BS5075: Part 3: Section 3.6 : 1978	Setting time	Typically 2 to 4 hours
-	Fresh wet density	2100 kg/m ³ @ 0.17 water : powder ratio
-	Chemical resistance	The cured mortar is resistant to acid gases, chloride ions, oxygen and water

Note : TM1-TM8 are test methods used in accordance with the Hong Kong Housing Authority Specification 1990. Specimens were stored at 27°C and 55% relative humidity.

Renderoc GP

Specification Clauses

The high-build reinstatement mortar shall be Renderoc GP, a single component cement-based blend of powders to which only the site-addition of clean water shall be permitted.

The cured mortar shall have a minimum compressive strength of 40 N/mm² at 28 days when tested in accordance with BS 6319, Pt 2: 1983. The cured mortar shall have a minimum flexural strength of 5 N/mm² when tested in accordance with BS 6319, Pt 3: 1983.

Steel reinforcement primer

The steel reinforcement primer to be applied where required shall be Nitoprime Zincrich (WB), two component water baser zinc-rich primer. The primer shall be an 'active' type, capable of avoiding the generation of incipient anodes in the immediately adjacent locations. It shall be fully compatible with the Renderoc system of concrete repair.

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, ie. where concrete is sound and of good quality but cover is to be increased, roughen the surface and remove any laitance by light scabbling or grit-blasting. It will still be necessary to cut back the perimeter to a depth of 10 mm so that the repair patch may be 'toed-in' and finished flush with the surrounding concrete.

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. 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 (WB) 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 1:1.5 by volume. The primer should be scrubbed well into the surface. Renderoc GP can be applied as soon as the primer becomes tacky. If the Nitobond primer is too wet, vertical and overhead build up of the Renderoc GP mortar may be difficult.

In exceptional circumstances, e.g. where a substrate/repair barrier is required or where the substrate is likely to remain permanently damp, Nitobond EP Slowset epoxy bonding aid should be used. Contact Fosroc office for further information.

Mixing

Care should be taken to ensure that Renderoc GP is thoroughly mixed. A forced-action mixer is essential. Mixing in a suitably sized drum using a "MR4" mixing paddle with a slow speed (400/500 rpm) heavy-duty (min 1kw) drill is acceptable for single bag mixes. Free-fall mixers must not be used.

For normal applications, place 4.0 to 5.0 litres of drinking quality water into the mixer and, with the machine in operation, add one full 25 kg bag of Renderoc GP and mix for 3 to 5 minutes until fully homogeneous. Note that powder must always be added to water. Dependent on the ambient temperature and the desired consistency, the amount of water required may vary slightly but should not exceed 5.0 litres per 25 kg bag of Renderoc GP.

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 GP to the prepared substrate by gloved hand or trowel. Thoroughly compact the mortar onto the primed substrate and around the exposed reinforcement. Renderoc GP can be applied up to 20 mm thickness in large sections overhead, 50 mm thickness in smaller pockets or with the use of formwork. If formwork is used, it should have properly sealed faces to ensure that no water is absorbed from the repair material. In horizontal locations, Renderoc GP can be applied up to 100 mm thickness.

Renderoc GP

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

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

Build-up

Where multiple layers will be applied by hand or trowel, the surface of the intermediate layers should be scratch-keyed and cured with Nitobond AR. Repriming with Nitobond SBR / cement slurry bond coat and a further application of Renderoc GP may proceed as soon as this layer has set.

Finishing

Renderoc GP 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.

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 GP is a cement-based repair mortar. In common with all cementitious materials, Renderoc GP must be cured immediately after finishing in accordance with good concrete practice. The use of Nitobond AR or Concure WB, sprayed on to the surface of the finished Renderoc in a continuous film, is recommended. In harsh drying conditions, supplementary curing such as polythene sheeting must be used. Concure WB must be removed before overcoating.

Overcoating with protective decorative finishes

The completed area of the repair can be overcoated generally after 24 hours. Fosroc recommends 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.

Cleaning

Nitobond SBR, Nitoprime Zincrich (WB) and Renderoc GP should be removed from tools, equipment and mixers with clean water immediately after use. Equipment used with Nitobond EP Slowset should be cleaned with suitable solvent. Cured material can only be removed mechanically.

Sampling Procedure

Fosroc standard test methods must be employed when performance testing this product. For full information please contact your Fosroc office.

Limitations

Renderoc GP 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 GP, 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 GP:	25 kg bags
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Nitoprime Zincrich(WB):	0.75 litre packs
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Nitobond SBR:	20, 25 and 200 litre drums
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Nitobond AR:	20 litre drums
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Nitobond EP Slowset:	4 litre packs
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Coverage and yield

Renderoc GP:	Approximately 13.90 litres/ 25kg bag (1.39 m ² at 10 mm thickness)
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Nitobond SBR:	2 to 5 m ² /litre (diluted as slurry primer/bond coat)
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Nitoprime Zincrich(WB):	6.5-8.5 m ² /litre
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Nitobond AR:	6 to 8 m ² /litre
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Nitobond EP Slowset:	15 m ² /4 litre pack
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Note: The actual yield per bag of Renderoc GP 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.

Note: In accordance with Commercial or Health & Safety requirements packaging detail may alter. Please contact your local Fosroc office for detail.



Renderoc GP

Storage

Shelf Life

Renderoc GP has a shelf life of 9 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 in high humidity conditions the shelf life may be reduced to 4 to 6 months. Nitobond AR and Nitoprime Zincrich (WB) liquid should be protected from frost.

Precautions

Health and Safety

Renderoc GP contains cement powders which, during normal use, have no harmful effect on dry skin. However, when Renderoc GP 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 (WB) 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.

For further information see relevant Material Safety Data Sheet.

Fire

Renderoc GP, Nitobond AR, Nitobond SBR and Nitobond EP Slowset are non-flammable.

Nitoprime Zincrich (WB) mixture is non-flammable.

Nitoprime Zincrich (WB) powder is flammable. Keep away from water. Keep away from sources of ignition. In the event of fire, extinguish with CO₂ or foam. Do not use a water jet.

For further information see relevant Material Safety Data Sheet.

Renderoc is the trademark of Fosroc International Limited



Important Note

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