TECHNICAL DATA SHEET

Renderoc GP

Single component medium-weight general purpose concrete reinstatement mortar

Uses

Renderoc GP is a general purpose concrete reinstatement mortar which can be used as a render as well as for all types of patch repairs. Renderoc GP is alkaline in nature and will protect embedded steel reinforcement. The mortar is suitable where superior resistance is required to chlorides and carbon dioxide.

This mortar is approved for use with Norcure realkalisation and desalination. Refer to the Norcure note in the 'Application instructions' section of this data sheet for information.

Advantages

- Can be applied by the dry spray process for fast, exceptionally high-build repairs with enhanced characteristics
- Low permeability provides good protection against carbon dioxide and chlorides
- Excellent bond to the concrete substrate
- Shrinkage compensated
- Pre-bagged to overcome site-batched variations — only the site addition of clean water required
- Contains no chloride admixtures
- Renderoc Galvashield XP compatible

Standards compliance

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

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 use. The material is based on Portland cement, graded aggregates, special fillers and chemical additives to provide a mortar with good handling characteristics, while minimising water demand. The product exhibits excellent thermal compatibility with concrete and good water repellent properties. The low water requirement ensures fast strength gain and long-term durability.

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Design criteria

Renderoc GP is designed for vertical, overhead or horizontal use. It can be applied up to 20 mm thickness in sections overhead and 30 mm thickness in 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 applied up to 100 mm thickness. Thicker sections can be built up in layers. The material should not be applied at less than 10 mm thickness. Thicknesses greater than 20 mm overhead and 30 mm vertically in large areas can be achieved by spray application. Consult the local Fosroc office for further information.

Properties

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

Test method	Typical result
Compressive strength (BS 1881 Pt 116 — dry cure):	9 N/mm² @ 1 day 28 N/mm² @ 28 days
Flexural strength (BS 6319 Pt 3: 1983):	7.0 N/mm² @ 28 days
Water absorption ISAT (BS 1881 Pt 5: 1970) —	
10 minutes:	0.18 ml/m²/sec
2 hours:	< 0.06 ml/m²/sec
Chloride diffusion (Taywood Method):	4 x 10^{-10} cm²/sec
Carbon dioxide barrier — Equivalent thickness of concrete to Renderoc GP @ 10 mm (Taywood Method):	220 mm
Equivalent thickness of air to Renderoc GP @ 10 mm (Taywood Method):	60 metres
Coefficient of thermal expansion:	7 to 12 x 10^{-6}/°C
Setting time (BS 5075) —	
Initial set:	3 hours, 30 minutes
Final set:	4 hours
Fire rating (BS 476 Pt 6: 1968 and BS 476 Pt 7: 1971):	Class 0
Fresh wet density:	Approximately 1850 kg/m³ dependent on actual consistency used

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

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, i.e. concrete is sound and of good quality but cover is to be increased, roughen the surface and remove any laitance by light scabbling or abrasive-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. 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 AR primer to overhead, vertical or horizontal substrates. The primer should be scrubbed 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 GP can be applied as soon as the primer becomes tacky. If the Nitobond AR 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 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 GP 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 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 a minimum of 3 minutes to a maximum of 5 minutes until fully homogeneous. Note that powder must always be added to water. 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 5.0 litres per 25 kg bag of Renderoc GP.

Mixing warning

As with other 'one pack' repair mortars, Renderoc GP 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.

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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 on to the primed substrate and around the exposed reinforcement. Renderoc GP can be applied up to 20 mm thickness in large sections overhead, 30 mm thickness in large vertical sections but up to 100 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.

If sagging occurs during application to vertical or overhead 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

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. Re-priming with Nitobond HAR and a further application of Renderoc GP may proceed as soon as this layer has set.

Spray application

Renderoc GP can be applied by the dry spray technique. In circumstances where large areas of repair are required, the rapid placement and higher build attainable by this method offers economic advantages over hand-trowelling. The resultant repair also offers a generally more dense compound with greatly enhanced mortar/substrate bond characteristics. For further details on the dry spray technique, consult the local Fosroc office.

Finishing

Renderoc GP 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.

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 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, sprayed on to the surface of the finished Renderoc in a continuous film, is recommended. Large areas should be cured as trowelling progresses (0.5 m^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.

Important note: When using this mortar in conjunction with Norcure realkalisation and desalination, polymer bonding primers and polymer curing agents should not be used. Taped polythene should be used for curing. No steel primer should be applied. Section E of the Norcure Specifiers' Guide must be consulted for details. Refer to the local Fosroc office for further advice.

Overcoating with protective decorative finishes

Renderoc GP 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.

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Cleaning

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

Limitations

Renderoc GP should not be used when the temperature is below 5°C and falling. Do not mix part bags. The product should not 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 GP:	25 kg bags

Coverage and yield

Renderoc GP:	Approximately 16.0 litres / 25 kg bag (1.6 m^2 at 10 mm thickness)

Notes: The actual yield per bag of Renderoc GP 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 6 months, if kept in a dry store away from any moisture and in the original, unopened bags or packs in a covered area.

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 months.

Precautions

Health and safety

Renderoc GP 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 respiratory protective equipment. The use of barrier creams provide additional skin protection. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and 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 GP is non-flammable.

For further information, refer to the Product Safety Data Sheet.

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Important note