Renderoc® RG Spl

constructive solutions

General purpose, non-shrink, cementitious micro-concrete

Uses

Renderoc RG Spl is used for repairs to damaged reinforced concrete elements, particularly where access is restricted and where vibration of the placed material is difficult or impossible.

It is suitable for various structural strengthening measures such as encasement build-ups, jacketing , piletop encapsulation resin system, etc.

Advantages

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state.
- Can be pumped or poured into restricted locations.
- Fluidity to allow for placement without vibration.
- Pre-bagged to overcome site-batched variations.
- Rapid strength gain to facilitate early reinstatement.
- High ultimate strengths and low permeability of cured repair.
- Contains no chloride admixture.
- Ensures piletop integrity as part of a waterproofing system

Description

Renderoc RG Spl is supplied as a ready to use blend of dry powders which requires only the site addition of clean water to produce a free-flowing non-shrink repair micro concrete. The material is based on Portland cements, graded aggregates and fillers, and additives which impart controlled expansion characteristics in the plastic state, while minimising water demand. The low water requirement ensures high early strength and long-term durability.

For larger repairs, the mixed Renderoc RG Spl may be modified by the addition of 5mm to 12mm clean, graded, saturated surface dry aggregates at site. For exceptionally large repairs, the local Fosroc office shall be consulted.

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.

Design criteria

Renderoc RG Spl can be applied in sections upto 100mm deep. For larger sections, the addition of approved aggregates may be required. This will depend on the specific configuration of the repair location. Fosroc office shall be contacted for further information.

Properties

The following results were obtained at a water:Powder ratio of 0.15 @ 30^{0}C.

Test	Typical result at 30^{0}C
Compressive strength (N/mm^2)	
1 Day	30
7 Days	60
28 Days	75
Tensile Strength	2N/mm^2 @ 28 days
Flexural strength	8N/mm^2 @ 28 days
Young's Modulus	25 kN/mm^2
Expansion characteristics	Unrestrained expansion of 1 to 4%. Pressure to restrain Plastic expansion - Approx. 0.004N/mm^2
Coefficient of thermal expansion	10 - 12 x 10^{-6} / ^{0}C.
Thermal conductivity	1.5 W/m^{0}C
Fresh wet density	2300 - 2400 kg/m^3

Specification clauses

Performance specification

The fluid micro-concrete repair material shall be Renderoc RG Spl, a single component, cement based, micro-concrete to which only the site-addition of clean water (and approved graded coarse aggregates where specified) shall be permitted. The micro-concrete shall contain no metallic aggregates, or chlorides and shall be shrinkage compensated in the plastic state. The micro concrete in the flowable consistency should achieve a compressive strength of not less than 30N/mm^2 after 24 hours at 30^{0}C. Most importantly, the cured microconcrete shall have a coefficient of thermal expansion similar to that of the host concrete.

Application instructions

Preparation

The unrestrained surface area of the repair must be kept to a minimum. The formwork should include drainage outlets for pre-soaking and, if beneath a soffit, provision for airventing. Provision must also be made for suitable access points to pour or pump the mixed micro-concrete in place.

Defective concrete surfaces must be cut back to a sound base. Smooth surfaces should be mechanically roughened. Corroded reinforcing steel should be exposed around its full circumference and cleaned to remove all loose scale and corrosion deposits. It is important to clean the steel to a bright condition. Grit-blasting is recommended.

One coat of Nitozinc Primer should be applied on the reinforcing steel. If any discontinuity in the applied film is noticed, one more coat has to be applied.

Several hours prior to placing, the concrete substrates should be saturated with clean water. Immediately prior to placing, any free water should be removed.

Note : For repair sections generally deeper than 100mm it may be necessary to mix the Renderoc RG Spl with properly graded 5mm to 12mm silt-free aggregate to minimise temperature rise. The quantity of aggregate required may vary depending on the nature and configuration of the repair location. However it can added between 50-100% by weight of microconcrete.

Mixing

Care should be taken to ensure that Renderoc RG Spl is thoroughly mixed in a forced-action mixer of adequate capacity. Alternatively, mix in a suitably sized drum with a high torque (400/500 rpm) rotary drill fitted with a mixing paddle. It is essential that machine mixing capacity and labour availability is adequate to enable the placing operation to be carried out continuously. The quantity water required will generally be between 3.50 litres and 3.75 litres per 25 kg bag of Renderoc RG Spl. The optimum water content should be determined and accurately measured into the mixer. However it should not exceed 3.75 litres/25 kg in any case. With the mixer running, slowly empty Renderoc RG Spl bag into the mixer. Mix continuously for 5 minutes, ensuring a smooth even consistency of the mix. Where the addition of graded coarse aggregate has been specified it should be added after the water and Renderoc RG Spl are properly mixed. Mixing should then continue for a further 1 minute to ensure proper dispersion.

Form Work

Slurry tight form work that will not deform or leak when subjected to hydraulic pressure imposed by the micro concrete will be fabricated and erected where the material is gravity fed, provision in the formwork will be made for a suitable feedhopper at the highest point. Where necessary, provision will be made for airvents to prevent air entrapment. Form work will be coated with Reebol mould releasing agent prior to fixing.

Placing

The mixed material should be placed immediately. if placed by pump, standard concrete pumping practice should be followed. The pump and pipeline must be primed with cement slurry. Pumping should be commenced immediately after priming. If poured in the form work, avoid air entrapment by pouring from one side only**.**

Low temperature working

In cold conditions down to 15°C, the use of warm water (upto 30°C) is advisable to accelerate strength development. Normal precautions for working with cementitious materials in winter should be adopted.

High temperature working

At ambient temperature above 35°C the material should be stored in the shade and cold water used for mixing.

Curing

As Renderoc RG Spl is a cement-based repair material, it should be cured immediately after stripping the formwork in accordance with good concrete practice. the use of Nitobond AR or any of Fosroc's Concure range of curing compounds, sprayed on the surface of the Renderoc RG Spl. in a continuation film, is recommended soon after tripping the form work. In harsh drying conditions, supplementary curing such a wed hessian or/or polythene sheeting must be used.

Estimating

Packaging

Renderoc RG Spl is supplied in 25 kg bags.

Yield

Approximately 12.0 litres per 25 kg bag. Actual yield per bag will depend on the consistency of Renderoc RG Spl and quantity of coarse aggregate added.

Storage

Shelf life

Renderoc RG Spl has a shelf life of 6 months if kept in a dry store in the original, unopened bags. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced.

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Precautions

Health & Safety instructions

Renderoc RG Spl contains cement powders which, during normal use, have no harmful effect on dry skin. However, when Renderoc RG Spl 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. Suitable gloves, eye protection and dust masks shall be worn. The use of barrier creams is recommended. Incase of contact with skin, it shall be washed with clean water. Incase of contact with eyes, it shall be rinsed immediately with plenty of clean water and medical advice shall be sought. If swallowed, medical attention shall be sought immediately - Vomitting should not be induced. Renderoc RG Spl is non-flammable.

Additional Information

Fosroc manufactures a wide range of products specifically designed for the repair and refurbishment of damaged reinforced concrete. These include hand placed and trowellable repair mortars, fluid micro concretes, chemical resistant epoxy mortars and a comprehensive package of protective coatings. In addition, a wide range of complimentary products are available. These include admixtures, joint sealants, waterproofing membranes, grouting, anchoring, and specialised flooring materials.

Separate datasheets are available on these products.

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