

Renderoc® RG

General purpose, non-shrink, cementitious micro-concrete

Uses

Renderoc RG 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 etc.

Advantages

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state.
- Can be pumped or poured into restricted locations.
- Highly fluid to allow for placement without vibration.
- Pre-packed 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.

Description

Renderoc RG 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 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 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 0.16 @ 30°C.

| Test | Typical result at 30°C | | | |
|---|------------------------------------|----|----|-----|
| Compressive strength (N/mm ²) (Tested on 70.7mm cubes as per BS 4551-80) | 1D | 3D | 7D | 28D |
| | 10 | 30 | 40 | 50 |
| Tensile strength | 2.0N/mm ² @ 28 days | | | |
| Flexural strength (BS4551 - 80) | 5N/mm ² @ 28 days | | | |
| Young's Modulus | 25 kN/mm ² | | | |
| Expansion characteristics (ASTM C827 - 1987) | Unrestrained expansion 1 to 4%. | | | |
| Pressure to restrain Plastic expansion | Approx. 0.004N/mm ² . | | | |
| Coefficient of thermal expansion | 10 - 12 x 10 ⁻⁶ / °C. | | | |
| Thermal conductivity | 1.5 W/m°C | | | |
| Fresh wet density (Mixed density @27°C) | 2100 - 2200 kg/m ³ | | | |

Specification clauses

Performance specification

The fluid micro-concrete repair material shall be 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 10N/mm² after 24 hours, 40N/mm² after 7 days and 50 N/mm² after 28

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days at 30°C. Most importantly, the cured microconcrete shall contain no metallic aggregates, or chlorides and shall be shrinkage compensated in the plastic state. The unrestrained expansion shall be between 1 - 4%. The flexural strength shall not be less than 5 N/mm² @ 28 days. The microconcrete shall have a coefficient of thermal expansion similar to that of the host concrete. The mixed density of microconcrete shall exceed 2100 kg/m³ at 27°C.

Supplier specification

All microcreting (specify details and areas of application) must be carried out using Renderoc RG, manufactured by Fosroc, applied strictly in accordance with the manufacturer's technical datasheet.

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.

Alternatively, all prepared concrete substrates should be primed using Nitobond EP, a slow - setting epoxy bond aid.

Nitobond EP shall be applied only on dry substrate.

Note : For repair sections generally deeper than 100mm it may be necessary to mix the Renderoc RG 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. The typical results with a few aggregate proportions, for various applications are furnished below for guidelines.

Typical results of Renderoc RG with graded coarse aggregates of maximum size 12mm.

Renderoc RG : Coarse aggregate (SSD)

1 : 0.75 (By weight)

Water: Powder ratio **0.16** (By weight)

Compressive strength (N/mm²)

| 1 D | 3 D | 7 D | 28D |
|-----|-----|-----|-----|
| 15 | 35 | 45 | 55 |

Workability **Flowable**

Note : W/P shall not be increased under any circumstances.

Estimating

Packaging

Renderoc RG is supplied in 25 kg moisture resistant bags.

Yield

Approximately 13.0 litres per 25 kg bag. Actual yield per bag will depend on the consistency of Renderoc RG and quantity of coarse aggregate added.

Storage

Shelf life

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.

Precautions



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Health & Safety instructions

Renderoc RG contains cement powders which, during normal use, have no harmful effect on dry skin. However, when Renderoc RG 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. In case of contact with skin, it shall be washed with clean water. In case 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 - Vomiting should not be induced. Renderoc RG 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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