

Non shrink cementitious jacketing concrete

Uses

- For enhancing earthquake resistance & resistance to lateral forces of columns, piles etc.
- For building up sections and improve the flexural rigidity
- For large economic repairs.

Advantages

- Gaseous expansion system compensates for shrinkage & settlement in the plastic state
- Can be pumped or poured.
- Fluidity to allow for placement without vibration.
- Prepacked to overcome site-batched variations.
- Low permeability.
- Contains no chloride admixture.
- Good strength gain to facilitate early reinstatement.

Description

Renderoc JC is supplied as a ready-to-use blend of dry powder, which requires only the site addition of clean water and cleaned washed aggregates (5-10mm), to produce non-shrink concrete jacketing. 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 early strength and long-term durability.

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 JC can be applied in sections ranging from 25mm upto 200mm deep. For sections upto 50mm thickness, no aggregates are to be added and from 50 to 100mm, upto 100% aggregates by weight of Renderoc JC can be added. For sections larger than 100mm upto 200mm, aggregates upto 125% by weight of Renderoc JC can be added.

Properties

The following results were obtained at a water powder ratio of 0.21 @ 30° C & with 100% aggregates

Test	Typical result at 30° C
Compressive strength (N/mm²)	
1 Day	10
3 Days	20
28 Days	30
Flexural Strength	3.0N/mm ² @ 28 days
Young's Modulus	22kN/mm ²
Expansion characteristics	: Unrestrained expansion upto 2%. Pressure to restrain
Plastic expansion	: Approx. 0.004 N/mm ²
Coefficient of thermal expansion	: 10-12 x 10 ⁻⁶ /° C
Thermal Conductivity	: 1.5 W/m°C
Fresh wet density	: 2100-2200 kg/m ³ (without aggregates) : 2500-2600 kg/m ³ (with 100-125% aggregates)

Specification clauses

The jacketing concrete for building up sections shall be Renderoc JC, a single component, cement based, material to which only the site addition of clean water and approved graded coarse aggregates are to be added. The jacketing concrete in the pourable consistency shall achieve a compressive strength of not less than 10 N/mm² after 24 hours at 30°C when mixed with 100% aggregates. Most importantly, the cured jacketing concrete shall contain no metallic aggregates, or chlorides and shall be shrinkage compensated in the plastic state. The jacketing concrete shall have a coefficient of thermal expansion similar to that of the host concrete.

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Application instructions

The existing cement concrete surface shall be roughened or hacked to provide a good mechanical key to the jacketing concrete.

Any extra longitudinal steel & ties provided (as per design) shall be cleaned & coated with anticorrosive coating of Nitozinc Primer applied to a thickness of 100 Microns wft. The extra steel shall be anchored with the help of shear connectors.

The form work shall be provided as per the design thickness of jacketing & it shall be leakproof & properly supported.

The concrete substrate shall be prewetted before pouring of Renderoc JC (Bonding agents like Nitobond AR or Nitobond EP can also be used).

Renderoc JC shall be mixed with 5-12 mm clean & washed aggregates, mixed @ a proportion of 50-125% by weight of Renderoc JC.

Mixing

Care should be taken to ensure that Renderoc JC is thoroughly mixed in a forced action mixer of adequate capacity. Alternatively, mix in a suitable size 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 of water required will be generally between 10.5 liters and 11.0 litres per 50 kg bag of Renderoc JC. The optimum water content should be determined and accurately measured into the mixer. However it should not exceed 11 litres/50 kg in any case. With the mixer running, slowly empty Renderoc JC bag into the mixer. The addition of graded coarse aggregate shall be made after the water and Renderoc JC are properly mixed. Mixing should then continue for atleast 3 minutes to ensure proper dispersion.

The coarse aggregates added shall be clean washed and in SSD condition.

Form Work

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

Placing

The mixed material shall be placed immediately after mixing. No vibration is required but slight poking & tapping of sides of form work will help in removing entrapped air.

Low temperature working

In cold conditions down to 15°C, the use of warm water (up to 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 JC is a cement based repair material, it must 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 JC in a continuous film, is recommended soon after stripping the form work. In harsh drying conditions, supplementary curing such as wet Hessian and/or polythene sheeting must be used.

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Estimating

Packaging

Renderoc JC is supplied in 50 kg bags.

Yield

Renderoc JC when mixed with a w/p ratio of 0.21 will provide an yield approximately as indicated below:

- Renderoc JC without any aggregates - 28 litres/50 kg
- Renderoc JC + 100% aggregates - 44 litres/50 kg
- Renderoc JC + 125% aggregates - 48 litres/50 kg

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

Health and Safety

Renderoc JC contains cement powders which, during normal use, have no harmful effect on dry skin. However, when Renderoc JC 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. 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. Renderoc JC 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 trowelable 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, grouts and anchors and specialised flooring materials.

Separate datasheets are available on these products.



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† See separate data sheet
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Important note :

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