Fosroc® Renderoc Plug

constructive solutions

Rapid setting cement-based, water-stopping mortars conforming to the requirements of BS EN 1504 Class R1

Uses

For the rapid patching and plugging of concrete segments, concrete and brick tunnel linings, sewage systems, below ground access chambers, pipes, basements, foundations and mines.

Advantages

- Emergency water-stopping capability
- Single component
- Excellent bond to the substrate
- Low exotherm minimises thermal cracking
- Pre-bagged to overcome variations in site batching
- Chloride-free
- Renderoc Plug 20: Approved for use in public water supplies
- Renderoc Plug 20: BS6920 tested product.

Description

Renderoc Plug are rapid setting mortars which are easy to apply to horizontal, vertical or overhead surfaces at a wide range of thicknesses.

There are two grades available: Renderoc Plug 1 with an initial set time of approximately 1 minute, and Renderoc Plug 20 with an initial set time of approximately 20 minutes. (Set times are based on ambient/substrate temperatures of 20°C.)

Specification Clauses

The water-stopping mortar shall be Renderoc Plug 1, a rapid setting one component material with an initial set time of 1 minute that shall be able to achieve a compressive strength of 10 MPa at 1 hour and 23 MPa at 28 days. The product shall be mixed, applied and cured in accordance with the manufacturer's written instructions to a correctly prepared substrate.

The water-stopping mortar shall be Renderoc Plug 20, a rapid setting one component material with an initial set time of 20 minutes that shall be able to achieve a compressive strength of 7 MPa at 6 hours and 45 MPa at 28 days. The product shall be mixed, applied and cured in accordance with the manufacturer's written instructions to a correctly prepared substrate.

Standards compliance

Renderoc Plug 1 and Renderoc Plug 20 comply with class R1 according to BS EN 1504-3 repair principle 3.1

Renderoc Plug 20: Conforms to:

Regulation 31 of the Water Supply (Water Quality) Regulations 2000

Regulation 31 of the Water Supply (Water Quality) Regulations 2001 in Wales

Regulation 27 of the Water Supply (Water Quality) (Scotland) Regulations 2001

Regulation 30 of the Water Supply (Water Quality)

Regulations (Northern Ireland) 2007

Water Regulations Advisory Scheme Approved.

BS 6920:2000 Effect on Water Quality.

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DOP: UK9-15 (Renderoc Plug 1)
DOP: UK9-23 (Renderoc Plug 20)

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Fosroc® Renderoc Plug 1
Fosroc® Renderoc Plug 20

EN1504-3:
Structural and non-structural repair method 3

Compressive strength	Class R1 ≥ 10 MPa
Chloride ion content	≤ 0.05%
Adhesive bond	≥ 0.8 MPa
Reaction to fire	Class A1
Dangerous substance	Complies with 5.4

WRAS APPROVED MATERIAL

Fosroc® Renderoc Plug

Properties

Material tested at a water:powder ratio of 1:3 by volume and temperature at 20°C

Test method	Standard	EN1504 R1 Requirement	Test result Renderoc Plug 1	Test result Renderoc Plug 20
Compressive Strength	EN 12190:1999	≥ 10 MPa	@ 1 hour 10 MPa @ 1 day 10 MPa @ 28 days 23 MPa	@ 6 hours 7 MPa @ 1 day 11 MPa @ 28 days 45 MPa
Bond strength by pull off	EN 1542:1999	≥ 0.8MPa	0.8 MPa @ 28 days	1.1 MPa @ 28 days
Chloride ion content	EN 1015-17:2000	≤ 0.05%	0.01%	0.01%
Fire rating	EN 1504-3 cl.5.5	-	Class A1 non-combustible	Class A1 non-combustible
Initial setting time @ 20°C	-	-	Approximately 1 minute	Approximately 20 minutes

Clarification of property values: The typical properties given are derived from laboratory testing. Results derived from field applied samples may vary.

Application instructions

Preparation

Areas to be patched should be cut back to a depth of 15 mm and given a good mechanical key. Feather-edges must not be allowed. Surface should be brushed clean to remove loose material, dust and laitance. Grease, slime or mould growth should be removed by steam cleaning or high-pressure water jetting. A proprietary degreasing agent should be used for removal of light oil or grease contamination.

To seal leaks, crack openings must be chased out to approximately 20 mm square. The chase should always be undercut to avoid leaving a v-section. All loose material and debris should be removed.

Mixing

Renderoc Plug should be added to clean water in the following proportions: One part clean water to three parts Renderoc Plug (by volume).

Mix to a stiff consistency in a suitable mixing vessel, using a trowel or gloved hand. Due to the rapid set characteristics of the product, only prepare a quantity of mortar which can be placed within the prescribed set time.

Application

Trowel apply or hand-knead the mixed mortar in place, ensuring maximum contact with the substrate before the material sets. No priming system is required but the substrate must be in a saturated surface dry state before application.

If being used to plug running water, Renderoc Plug 1 should be used and held in place until the initial set is reached.

The minimum application thickness of Renderoc Plug products is 15 mm.

When using Renderoc Plug 20 as a patch repair product, a maximum bay size of 0.06m² is permitted. Linear sections should not exceed 0.25 metres.

Low temperature working

In cold conditions down to 1°C, the use of warm water (up to 20°C) is advisable to accelerate strength development. Normal precautions for winter working with cementitious materials should be adopted. The material should not be applied when the substrate and/or air temperature is 1°C and falling. At 1°C static temperature or at 1°C and rising, the application may proceed. Set and cure times will be increased at low temperatures. If in doubt contact the local Fosroc office.

High temperature working

At ambient temperatures above 35°C, the material should be stored in the shade and cooler water (down to 20°C) used for mixing. Set and cure times will be reduced at high temperatures.

Curing

For UK wholesome water purposes where contracts require DWI or WRAS certifications, Renderoc Plug 20 should be mixed, applied and cured in accordance with the manufacturer's Instructions For Use sheet (contact Fosroc Technical Helpdesk).

Cleaning

Renderoc Plug products should be removed from equipment with clean water prior to the initial set. Cured material can only be removed mechanically.

Estimating

Renderoc Plug 1 is supplied in 6 kg bags each yielding 3 litres.

Renderoc Plug 20 is supplied in 25 kg bags each yielding 12.5 litres.

Storage

The product has a shelf life of 12 months from the date of manufacture if kept in dry storage in the original, unopened

bags. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced to less than 6 months.

Precautions

Health and safety

For further information, refer to the Safety Data Sheets available at www.fosroc.com.

Fire

Renderoc Plug products are non-flammable.

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