Fosroc® Guncrete E

constructive solutions

High strength, low shrinkage, high build dry-spray applied repair mortar

Uses

For the reinstatement of large areas of concrete and for small, localised patch repairs in areas such as sea walls bridge decks and piers, tunnels, sewer pipes, etc.

Guncrete E is suitable for use with Galvashield incipient anode protection and Cathodic Protection system. Contact Fosroc for further details.

Advantages

- Made in Australia
- RCS (Respirable Crystalline Silica) Hazard Free*
- High build formulation - fewer applications of product
- High strength - suitable for structural repairs
- High early strength - reduced back to service time
- Low drying shrinkage - provides long term dimensional stability
- Low rebound - less waste on site
- Chloride free
- Suitable for use with Galvashield anodes

Description

Guncrete E is supplied as a ready to use dry powder for use with standard dry spray gunite or shotcrete equipment. The material is formulated to produce a high build, material which can be applied by standard dry-spraying techniques.

*Guncrete E is classified not hazardous for RCS in accordance with Australian Inventory of Industrial Chemicals; Contains <0.1% RCS.

Design Criteria

Guncrete E is designed for vertical or horizontal applications up to 150mm thick and up to 80 or 100mm thick per layer for overhead applications depending on the substrate geometry.

Thicker sections can be achieved by applying multiple layers.

The material should not be applied at less than 10mm thickness.

Application Instructions

Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 10mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 10mm 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, roughen the surface and remove any laitance by light scabbling or grit-blasting.

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. Grit-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 grit-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.

Low temperature working

In cold conditions 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 not be used as this will cause premature setting.

Application

A separate **Guncrete E Application Guidelines** document is available from the Fosroc website to provide more detailed information on 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.

The substrate should be thoroughly washed with clean water. Immediately prior to the application of the Guncrete E the substrate should be pre-soaked and kept damp with clean water to totally satisfy absorption. Any excess water removed prior to the spray application of the Guncrete E.

Apply the Guncrete E to the prepared substrate using suitable guniting or shotcreting equipment. Ensure thorough compaction of the mortar around the exposed reinforcement.

If sagging occurs during application to vertical surfaces, the Guncrete E should be completely removed and reapplied at a reduced thickness on to the substrate.

Refer to the Guncrete Application Guidelines for details on applying the product in layers.

Note: the minimum applied thickness of Guncrete E is 10mm.

Finishing

Guncrete E 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.

Guncrete E's aggregate composition provides for a textured finish affect. If a smooth, closed render appearance is required, the subsequent application of Renderoc FC is necessary.

Fosroc® Guncrete E

Properties

The following results were obtained at a water:powder ratio of 0.1 and temperature of 20°C unless otherwise stated.

Test Method	Standard	EN 1504 R4 Requirement	Test Result	
Compressive Strength	EN 2190:1999 AS 1478.2 - 2005	≥ 45 MPa -	84.0 MPa @28 days 35 MPa @ 1 day 60 MPa @ 7 days 70 MPa @ 28 days	
Bond strength by pull off	EN 1542:1999	≥ 2.0 MPa	Without primer (pre-soak)	3.2 MPa
Chloride ion Content	EN 1015-17:2000	≤ 0.05%	0.003%	
Capillary Absorption	EN 1307:2002	≤ 0.5 Kg/(m² x $h^{0.5}$)	0.1 Kg/(m² x $h^{0.5}$)	
Carbonation Resistance	EN 13295:2005	d ≤ref concrete	Conform	
Coefficient of thermal expansion	EN 1770:1990	Declared Value	16.3 x 10^{-6} /°C	
Shrinkage and Expansion	EN 12617-4:2002	> 2.0 MPa	Shrinkage: 2.7 MPa Expansion: 2.8 MPa	
Elastic Modulus	EN 13412:2008	> 20 GPa	52.8 GPa	
Chloride Diffusion	Nordtest NT Build 443	-	D_e: 1.0 x 10^{-12}m²/sec	
Flexural Strength	AS 1012.11 - 2000	-	10.1 MPa @ 28 days	
Tensile Strength	AS 1012.10 - 2000	-	5.5 MPa @ 28 days	
Setting Time	AS 1012.18 - 1996	-	Initial Set: 4.5 hours Final Set: 10 hours	
Fresh Wet Density		-	2160 Kg/m³	
Drying Shrinkage	AS 1012.13 - 1992	-	< 500 microstrains @ 7 days < 600 microstrains @ 56 days	
Alkali reactive particles	RTA Rapid Mortar Bar Test RTA T363	-	<0.1% (Non-Reactive)	

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

Curing

Guncrete E is a cement-based repair mortar. In common with all cementitious materials, Guncrete E must be cured immediately after finishing in accordance with good concrete practice. The use of Concure A99 or Nitobond AR, sprayed on to the surface of the finished Guncrete E in a continuous film, is recommended. Large areas should be cured as trowelling progresses (0.5m² 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.

Overcoating with protective decorative finishes

Guncrete E is extremely durable and will provide excellent protection to the embedded steel reinforcement within the repaired locations. The surrounding parts of the structure will generally benefit from the application of a protective 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 recommends 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 following the removal of **any** curing membranes prior to the application of Dekguard system to allow penetration of the silane primers.

Fosroc® Guncrete E

Cleaning

Concure A99, Nitobond AR and Guncrete E should be removed from tools, equipment and mixers with clean water immediately after use. Cured material can only be removed mechanically.

Equipment used with Nitoprime Zincrich should be cleaned with Fosroc Solvent 10.

Limitations

Guncrete E 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, contact Fosroc.

The degree of rebound with any spray applied cementitious product is heavily influenced by the skill and experience of the spray nozzle operator. Overhead applications will produce higher rebound results.

Supply

Guncrete E 20kg:	FC302060-20KG
Nitoprime Zincrich 1 litre:	FC322100-1L
Concure A99 20 litres:	FC600909-20L
Nitobond AR 5 litres:	FC320015-5L
Nitobond AR 20 litres:	FC320015-20L
Fosroc Solvent 10 4 litres	FC600800-4L
Fosroc Solvent 10 20 litres:	FC600800-20L

Coverage and yield

Guncrete E:	Approx 10.0 litres / 20 kg bag
Nitoprime Zincrich:	7m^2 /litre (approx.)
Concure A99:	5m^2 /litre
Nitobond AR:	6 - 8m^2 /litre

Note: the actual yield per bag of Guncrete E will depend on the consistency used.

Storage

Guncrete E has a shelf life of 36 months from date of manufacture if kept in the original, unopened bags. Refer to the manufacture date indicated on the packaging. Do not use if there are lumps in the product, or a loss of workability (requiring more water to be added) is experienced.

Important notice

A Safety Data Sheet (SDS) is available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

FOSROC *constructive solutions*

*Manufactured and sold under license from Fosroc International Limited. Fosroc and the Fosroc logo are trade marks of Fosroc International Limited, used under license.

Parchem Construction Supplies Pty Ltd
1956 Dandenong Rd Clayton Vic 3168
Ph: 1800 812 864
www.fosroc.com.au ABN 80 069 961 968

Distributed in New Zealand by: Concrete Plus Ltd
150 Hutt Park Road Gracefield Ph: 0800 657 156
www.fosroc.co.nz NZBN 9429033691282