



BluCem GeoRoc™

HIGH PERFORMANCE GEOPOLYMER MORTAR



BluCem GeoRoc™ is a one component geopolymer cement which requires only the addition of water to form a next generation cementitious mortar.

BluCem GeoRoc™ is a sprayable, chemically resistant product suitable for civil engineering applications. BluCem GeoRoc™ incorporates sustainable recycled pozzolanic powders to form a cementitious mortar which is environmentally friendly, green star rated with high flexural strength and extremely low shrinkage.

Application Advantages

- High early strength
- High build
- Sprayable
- Negligible rebound and wastage

Lifecycle Advantages

- Environmentally friendly
- Green star rated
- High flexural strength
- Excellent corrosion resistance
- Low shrinkage
- Extremely high bond

About the Product

BluCem GeoRoc™ is a geopolymer mortar. Geopolymer mortars are created by activating pozzolanic waste materials such as fumed silica, blast furnace slag and flyash. These products are usually seen as waste materials which are by-products of the steel and power generation industries. The activation of these materials creates a very strong, chemical resistant, rock-like product which can be used for structural shotcrete linings and other industrial applications.

Application Solutions

- Concrete protection
- Sewer protection
- Industrial concrete protection
- Concrete repair
- Structural repair of beams
- Floor repair and topping
- Tunnel support
- Strata support

Project Specification Clause

HIGH PERFORMANCE GEOPOLYMER MORTAR - The cementitious mortar used for this project shall be a one component geopolymer cement which requires only the addition of water to form a durable next generation product. It shall be a pre-blended product that has independent testing to validate the performance outlined in the technical data table on the following pages. BluCem GeoRoc™ manufactured by Bluey Technologies or equivalent shall be accepted.

Project Examples

Airport construction, bridge repair, building repairs, dam construction and repair, factory floors, car park decks, jetty construction and repair, concrete structures, rail construction, rail repairs and shutdowns, retaining walls, road cuttings, road repairs, runway repairs and shutdowns, sea wall repair and maintenance, sewer repair and lining, tunnel lining, tunnel rock support, warehouse floors, wharf repair and construction.



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Milliken Infrastructure Solutions, LLC



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Application Specification

CONCRETE PREPARATION

- 1.1 All defective host substrate must be removed prior to application. Defective material includes cracked or structurally weakened surfaces and also chloride contaminated and carbonated surfaces. For rock cuttings/faces all loose rock, debris, dust and all other surface contaminants must be removed. High-pressure water blasting or mechanical scaling of the surface is recommended for this purpose.
- 1.2 Host concrete must be roughened and aggregate exposed to ensure good bond. High pressure water blasting is recommended for this purpose. For steel surfaces all rust, dirt and contamination must be removed to achieve Sa 2.5 surface finish.
- 1.3 All surfaces must be free of dust, oils and surface contaminants.
- 1.4 Priming by saturation of the surface using water prior to application is required. Priming with epoxy primers or other products, which prevent vapor transmission, is not recommended.

MIXING

- 2.1 Measure and place 85% of the specified volume of potable water to the high shear mixing vessel. Slowly add BluCem GeoRoc™. Following addition of all powder, mix for 1 - 2 minutes or until uniform consistency then add final 15% of potable water. Do not exceed 0.20 w/c ratio. Do not mix more material than can be placed in 30 minutes.

PUMPING

- 3.1 Special pumping and mixing equipment is required for BluCem GeoRoc™ which can be applied by either wet or dry spraying. Various models of batch mixers and continuous mixers are available for use. It is important to match your application's specifics with the capabilities of the mixer and pump. Bluey Technologies are able to recommend the right mixer for your project.
- 3.2 For wet spraying applications rinse the mixer and charge the pump hopper with sufficient water to flush and cool the pump and all grout lines thoroughly. Check to ensure that all lines and hoses are clear and unobstructed. Once grout is mixed, it is important to keep it agitated continuously prior to pumping. Although this product has a long pot life, if the grout is allowed to sit then it will 'gel' and may become more difficult to pump.
- 3.3 For dry spraying applications, empty the dry powder directly into the hopper and adjust water and air at the nozzle for suitable consistency.
- 3.4 Following completion, dispose of excess production material in consideration of the environment. Carefully wash out machinery and surrounding areas.

APPLICATION TEMPERATURES

- 4.1 As with the water temperature, the higher the air temperature the more quickly the grout hydrates and sets. Bluey Technologies specify mixing times and set times at an ambient temperature of 20°C. These times vary with temperature fluctuations, and adjustments will be required to compensate for this. Exposing the pumping hoses to the sun on a hot day accelerates the product's set time. In some cases it may be necessary to cool the material, the mix water, or even the hose itself during the process and pre-planning the storage of all materials to keep the temperature as low as possible.

APPLICATION

- 5.1 BluCem GeoRoc™ may be poured, pumped, trowelled or sprayed into place. All defective host substrate must be removed prior to application. If necessary, trowelling of the product following spray application shall be in an upward motion to compress the material. Avoid over trowelling the product. BluCem GeoRoc™ can be finished with a steel trowel, wood or sponge float or broom finish depending on the surface texture desired.

CURING

- 6.1 It is recommended for optimum curing to be in a moist and moderate environment. The use of wind barrier or fogging spray may be required in dry and/or hot conditions.



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Product Data

Please refer to Important Notice on following page

Packaging	20kg bags or 1200kg bulk bags
Water Addition	4.0 litres of water per 20kg bag
Yield	~10.6 litres per 20kg bag

TESTED CHARACTERISTIC	STANDARD	RESULT
Compressive Strength	ASTM C39/C-109	17MPa @ 24 hours 55MPa @ 28 days
Bond Strength	ASTM C-882	9MPa @ 24 hours 11MPa @ 28 days
Elastic Modulus		40GPa
Tensile Strength	ASTM C-496	5.5MPa @ 28 days
Shrinkage	ASTM C-1090	0.00% @ 65% R.H. @ 28 days
Flexural Strength		6.2MPa @ 7 days 9MPa @ 28 days
Setting Time	ASTM C-807	Initial set - 60 - 75 minutes Final set - 90 - 110 minutes
Rapid Chloride Ion Permeability	ASTM C-1202	Very low @ 28 days



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Contact Bluey

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IMPORTANT NOTICE

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