

Milliken Infrastructure Solutions

GeoRoc™

Thin-Spray Geopolymer Coating

 STORM + SANITARY

 BUILDINGS + PARKING FACILITIES

 BRIDGES + ROADWAYS



GeoRoc™ geopolymer is a high performance fiber reinforced mortar specifically designed for surface reinforcement and weathering protection of soils, rock and coal strata. This high strength, ultra-low porosity material is made from natural mineral polymers and recycled industrial waste streams. Available in 50 lb (22.7 kg) sealed bags or in 2,000 lb (908 kg) super sacks.

Benefits

- Adheres to concrete, rock, soil or coal creating a high strength wall
- Designed for mechanical pumping and spraying
- Inorganic polymeric system that adheres strongly to cement surfaces

Typical Uses

GeoRoc geopolymer is recommended for applications in:

- Civil works
- Mining
- Oil & Gas

Storage

GeoRoc geopolymer shall be stored in a cool, dry location. Stored under proper conditions, shelf life is one year.

Test Method	Duration	GeoRoc
Flexural Strength ASTM C-78	7 Days 28 Days	750 psi / 5.2 MPa 1500 psi / 10.3 MPa
Modulus of Elasticity ASTM C-469	1 Day 28 Days	3,000,000 psi / 20700 MPa 5,800,000 psi / 40000 MPa
Bond Strength to Concrete ASTM C-882	1 Day 28 Days	Min 900 psi / 6.2 MPa Min. 2,5000 psi / 17 MPa
Set Time ASTM C-807 - 08 Initial Cure Time	Initial Set Final Set	60 - 75 Minutes 90 - 110 Minutes
Freeze Thaw Durability ASTM C-666	300 Cycles	100% Zero Loss
Shrinkage ASTM C-1090	28 Days	0.00% @ 65% R.H.
Tensile Strength ASTM C-496	28 Days	Min. 800 psi / 5.5 MPa
Surface Flammability ASTM E-162		Class A

Strength Enhancing Mine Sealant, Suitability Number MSHA-S36 - minimum applied thickness ¼ inch.

infrastructure.milliken.com
855-655-6750

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Composition

A proprietary micro-fiber reinforced ultra-dense geopolymer mortar designed for mechanical pumping and spraying. GeoRoc geopolymer is an inorganic polymeric system that adheres strongly to prepared cement surfaces and itself.

Characteristics

A dark grey mortar with near-zero porosity. Wet density of ~127 lbs/ft³, or 2035 kg/m³. Largest particle size: 3.0 mm.

Yield and Coverage

Yields 0.43 ft³ (0.012 m³) per 50 lbs. For one 50lb bag, coverage is 10.3 ft² at 0.5" depth (0.96m² per 12mm depth)

Packaging

GeoRoc geopolymer is available in 50lb (22.7kg) sealed bags or in 2,000lb (908kg) super sacks.

Cleaning and Preparation

The surface shall be thoroughly cleaned. Use high-pressure water blasting with a minimum of 3500 psi (or as required by local provisions) to clean and free all foreign material, including dirt, grit, roots, grease, sludge or other material that may be attached to the existing surface. All loose or defective brick, grout, or surface irregularities should be removed to provide an even surface prior to application. When grease and oil are present, an approved detergent or muriatic acid shall be used integrally with the high pressure cleaning water. All materials resulting from the cleaning of the pipe shall be removed prior to application of GeoRoc.

Mixing

Do not exceed a 0.20 w/c ratio. Always add GeoRoc geopolymer to the water. Follow normal industry standards for batching and mixing.

Work Time

Work time is 60 - 90 minutes at 80°F (27°C).

Application

Once mixed to proper consistency and homogeneity, GeoRoc geopolymer can be hand troweled as a repair mortar for crack repair prior to spraying.

GeoRoc geopolymer should be pumped from a horizontal mix auger cavity via an adjustable rotor stator pump through a hose for delivery to the appropriate application device (spray nozzle or spinner head), and shall be applied to a damp surface.

GeoRoc geopolymer has an ultra-low abrasion rate on hoses and equipment; they will last much longer, with fewer interruptions and remobilizations.

Finishing

If necessary, troweling of materials can begin following the spray application. Initial troweling shall be in an upward motion, to compress the material into voids and solidify the pipe wall. Take precautions not to over trowel.

GeoRoc geopolymer can be finished using a steel trowel, wood float, sponge float, broom or brush, depending on the surface texture desired. Do not use a magnesium float.

Curing

Optimum curing occurs in a moist and moderate environment. General underground conditions are usually adequate to meet this requirement. If dry and/or hot conditions are present, the use of a wind barrier and fogging spray will be required.

During hot weather conditions, chilled water may be used to mix GeoRoc geopolymer. GeoRoc geopolymer cement should be maintained at a temperature lower than 90°F (32°C).

Standard industry practices may be used to maintain proper temperature.

Alternatively, GeoRoc geopolymer should not be placed when the temperature in the curing environment is below 37°F (3°C). During cold weather conditions, heaters, thermal breaks, and other methods may be used to maintain temperature above that threshold.

Quality Control & Material Testing

For each section length designated by the owner in the contract documents or purchase order, GeoRoc will be collected at the end of the hose near the discharge point. Use 4" by 8" cylinders in accordance with Test Method ASTM C 39/39M or sprayed panels in accordance with ASTM C1140.

Health & Safety

GeoRoc, is a cementitious powder, is alkaline and may cause significant skin and eye irritation. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safety and health precautions, reference the current version of the Safety Data Sheet. When using GeoRoc geopolymer in a confined space or closed area, consult the current OSHA or ANSI bulletins on safety requirements. Do not take internally. If swallowed, call a physician immediately.

Warranty

Milliken Infrastructure Solutions, LLC warrants this product to be free of defects in material and manufacturing. Should the product prove to be defective, the liability to Milliken Infrastructure Solutions shall be limited to replacement of the product, exfactory. Milliken Infrastructure Solutions makes no warranties as to merchantability or fitness for a particular purpose. This warranty is in lieu of all other warranties expressed or implied. Users should determine the suitability of the product for the intended use and assume all risk and liability in connection therewith.

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Before using any Milliken Infrastructure Solutions, LLC product, the user must review the most recent version of the product's technical data sheet, material safety data sheet and other applicable documents, available at infrastructure.milliken.com or by calling 1-855-655-6750.

LIMITED WARRANTY: Milliken Infrastructure Solutions, LLC is very proud of our innovative GeoRoc™ products (the "Products") and our superior customer service. We hereby warrant to the original purchaser that the Products meet Milliken's standard specifications at the time of delivery from us. If the Products are found to be defective because they do not meet this Warranty, then we will as the sole remedy either (at our option) refund the purchase price for those Products or provide replacement Products (in either case, not including shipping, installation or any other cost). Naturally, we are not responsible or liable for degradation, damage, liability or defect in, or related to, the Products caused by improper storage, use, installation or maintenance, any other party's representations, warranties, actions, or omissions, or acts of God. WE MAKE NO REPRESENTATION OR WARRANTY BEYOND THE EXPLICIT STATEMENTS CONTAINED IN THIS WARRANTY, AND ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, INFRINGEMENT, OR ANY WARRANTIES BASED UPON SAMPLES, MODELS, OR SPECIFICATIONS, ARE HEREBY EXPRESSLY DISCLAIMED. NOTWITHSTANDING ANYTHING TO THE CONTRARY, IN NO EVENT SHALL WE BE LIABLE TO THE ORIGINAL PURCHASER OR ANYONE ELSE FOR ANY CONSEQUENTIAL, INDIRECT, SPECIAL, OR EXEMPLARY (OR ANY SIMILAR TYPE OF) DAMAGES RELATED TO THE PRODUCTS. As each customer's use of our Products and situation may be different, information we provide, including without limitation, use or installation suggestions, test results, samples, etc. is provided in good faith but without warranty and without accepting any responsibility or liability. Each customer must test and be responsible for its own specific use, installation, application, etc. All sales are exclusively subject to our standard terms of sale posted at www.milliken.com/terms (all additional/different terms are rejected) unless explicitly agreed otherwise in a signed writing. This Warranty is governed by the laws of the United States and the State of South Carolina, U.S.A. (without giving effect to its conflict of law principles), and any party desiring to take action under this Warranty hereby submits to the exclusive jurisdiction of the courts in such jurisdiction and waive any inconvenient forum claims related thereto. In the unlikely event that you have a warranty issue, please contact your distributor or sales representative to discuss and resolve the matter in accordance with this Warranty.