GEOSPRAY® HCE

Geopolymer Mortar for Highly Corrosive Environments

WATER/WASTEWATER

APPLICATIONS:

Wastewater/Industrial/Sewer /Manhole

GeoSpray HCE geopolymer is the next generation of high-performance fiber reinforced geopolymer mortars. Specifically formulated for highly corrosive environments, this high strength, ultra-low porosity single component material raises the performance level of mortars for use in municipal and industrial wasterwater applications, such as sanitary sewers, manholes, wet wells, lift stations tanks and containment areas.

GeoSpray HCE maintains the industry leading attributes that have made GeoSpray the preeminent geopolymer mortar:

- High flexural, tensile and bond strength
- Minimizes cold joints between layers
- Consistent performance from bag to bag and truckload to truckload
- Designed for use in multiple application techniques, including pouring, troweling, spraying and centrifugal/spin casting

BENEFITS

- Provides physical properties associated with cement mortars, but with the chemistry similar to that of an engineered stone
- Superior corrosion resistance verified through 3rd party testing to DIN 19573 standard XWW4
- Can be applied monolithically to any shape pipe, including right angles, curves, boxes and ellipses
- Safe and sustainable

TEST DATA

Compressive Strength (ASTM C-39/C-109)	1 Day 28 Days	Min. 2,500 psi / 17 MPa Min. 8,000 psi / 55 MPa
Flexural Strength (ASTM C-78)	7 Day 28 Days	750 psi / 5.2 MPa 1500 psi / 10.3 MPa
Set Time (ASTM C-807)	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
Chemical Resistance (DIN-19573)	-	XWW1-XWW4 Certification

WITH GEOSPRAY HCE TYPICAL USES:

- Very Corrosive sewer or industrial applications
- pH < 2.0
- High H_2S environments

GEOTREE

www.geotreesolutions.com

+1.855.655.6750

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COMPOSITION

A proprietary fiber reinforced ultra- dense geopolymer mortar designed for mechanical pumping and spraying. GeoSpray HCE 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/ft^3, or 2035 kg/m^3. Largest particle size: 3.0 mm.

YIELD AND COVERAGE

Yields 0.43 ft^3 (0.012 m^3)per 50 lbs. For one 50lb bag, coverage is 10.3 ft^2 at 0.5" depth (0.96m^2 per 12mm depth)

PACKAGING

GeoSpray HCE 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 of GeoSpray HCE. 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 GeoSpray HCE.

MIXING

The mortar should be batched or mixed to a consistency that matches the requirements of application and pumping on site. Typically the range of water to material ratio is between 0.15 and 0.18, do not exceed 0.20 w/m ratio.

Always add GeoSpray HCE to the water. Follow normal industry standards for batching and mixing.

STORAGE

GeoSpray HCE geopolymer should be stored in a cool, dry location. Stored under proper conditions, shelf life is one year.

WORK TIME

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

APPLICATION

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

GeoSpray HCE 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.

GeoSpray HCE 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.

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

GeoSpray HCE, 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 for GeoSpray. HCE When using GeoSpray HCE 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

GeoTree Solutions warrants this product to be free of defects in material and manufacturing. Should the product prove to be defective, the liability to GeoTree Solutions shall be limited to replacement of the product, exfactory. GeoTree 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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