

MANHOLE MORTAR™

High Strength Structural Repair Mortar

Product Data Sheet

Product Description

Ultra high strength blended **STRUCTURAL** Mortar with **Microsilica** and Polypropylene fibers. Designed to repair and/or reinforce sewer structures such as Manholes, Lift Stations, Waste Water Treatment Plants and/or any aged concrete or masonry structures. Product can be **SHOTCRETE**, hand applied, or pumped into place. Product is a well proportioned blend of quality materials such as **MICROSILICA**, and other **HIGH STRENGTH ADMIXTURES** to enhance workability, **BONDING**, strength, and resistance to harsh **H₂S** gas/chemical attacks. Product comes in a prepackaged OSHA compliant 50lb bag and 3000lbs bulk bags. Product conforms to industry standards **ACI 201.2R-01** Guide to Durable Concrete, **ASTM F 2551-09**, and **NASSCO's** min. Physical Properties for Manhole Renovation. Tests conducted by certified labs, ***Trenchless Technology Center Louisiana Tech University**, and **CIGMAT University of Houston**. Approved for use on federal (**ARRA**) projects, **Made in America** Product.

****Approved by City of Houston Department of Public Works & Engineering for Wastewater Structural Repair. Registered Professional Engineer tested and certified product.**

Physical Properties Data

Results may vary

***Compressive Strength ASTM-C109**

1 day 4000 psi

7 days 7000 psi

28 days **>10000 psi**

Compressive Strength ASTM-C39

28 day Load **101980 lbf**

Flexural Strength ASTM-C78

1 day 590 psi

7 days 1160 psi

28 days **1440 psi**

Bonding

Brick/Concrete Substrate Failure

***Sulfuric Acid Testing ASTM-C267**

pH=1 <0.80% Mass Loss

pH=2 <0.50% Mass Loss

pH=3 <0.00% Mass Loss

***Durability Freeze/Thaw ASTM-C666**

After 300 cycles **nearly constant** during the duration of program for **satisfactory performance**

Slump ASTM-C143 3 inches

Maximum of 2 inches per application

Water content/bag ~ 2/3-1 gal 50 lbs

ASTM-C1202

Coulombs < 400 very low

Material Wet Density 136 PCF

50lb Bag Yield

5 sf. at 1" thick mixed with 96oz of water

Manhole Before



Manhole After



Products Distributed by:
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Technical Data

APPLICABLE STANDARDS

ASTM International

- ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete (AASHTO T24)
- ASTM C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
- ASTM C882 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
- ASTM C1012 Standard Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution
- ASTM C1202 Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
- ASTM C1399 Test Method for Obtaining Average Residual-Strength of Fiber-Reinforced Concrete
- ASTM C1480 Standard Specification for Packaged, Pre-Blended, Dry, Combined Materials for Use in Wet or Dry Shotcrete Application

PHYSICAL/CHEMICAL PROPERTIES

The performance of dry process shotcrete cannot be duplicated in the laboratory. In spite of that fact, laboratory data are important for quality control purposes and for making comparisons between formulations. Manhole Mortar products have been extensively tested both in the laboratory and in the field. The greatly enhanced performance in the field shows the benefits of low water/cement ratio and compaction. The field test data are offered only as an example of what can be achieved with qualified operators using proper techniques. The quality of wet process shotcreting is very dependent on the skills of the operator. Manhole Mortar complies with Grades SR (Sulfate-Resistant) and LP (Low Permeability). Manhole Mortar with Steel Fibers complies with Grade FR (Fiber-Reinforced), Class II. Southern Trenchless Solutions LLC..also offers custom designs to meet other types and grades

of ASTM C1480, **as well as job specific specifications.**

Consult Southern Trenchless Solutions LLC. Representative for details.

5. Installation EQUIPMENT

Manhole Mortar™ is normally applied using wet process shotcrete machinery. Wet process shotcrete is a very efficient method for making repairs to horizontal, vertical and overhead surfaces.

The process allows for the placement of the repair material at a very low water/cement ratio with a high degree of compaction. The result is a repair that is superior to other methods of placement of repair material.

Manhole Mortar™ can also be applied using wet process shotcrete machinery. **The performance will be enhanced by the appropriate choice of admixtures.**

Consult Southern Trenchless Solutions LLC. representative for details.

PREPARATORY WORK

Southern Trenchless Solutions LLC. recommends that job mock-ups be prepared by the contractor and tested prior to beginning a project.

METHODS

Southern Trenchless Solutions LLC. recommends that the applicator be ACI certified and that American Concrete Institute (ACI) Committee 506 or ASTM F 2551-09 Standard Practice for Installing a Protective Cementitious Liner System in Sanitary Sewer Manholes procedures be followed for surface preparation, equipment, nozzleman certification and shotcrete placement and curing procedures. Refer to the following

- ACI 506R-90 Guide to Shotcrete
- ACI 506.2-95 Specifications for Shotcrete
- ACI 506.1R-98 Committee Report on Fiber Reinforced Shotcrete
- ACI CP-60 Craftsman Workbook for ACI Certification of Shotcrete Nozzleman

APPLICATION

Application Over Concrete Surfaces

Remove all spalled, severely cracked, deteriorated, loose and unsound concrete from existing concrete surface by chipping, water blasting or other mechanical methods. Adequate pre-wetting of the concrete substrates should be done prior to shotcreting.

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