

PRODUCT DATA

FIVE STAR CENTRI-CAST PIPE REPAIR MORTAR HS HIGH STRENGTH, CENTRIFUGALLY CAST, FIBER-REINFORCED PIPE REPAIR MORTAR

Also Available with Microban® Technology

PRODUCT DESCRIPTION

Five Star Centri-Cast Pipe Repair Mortar HS and Five Star Centri-Cast Pipe Repair Mortar HS w/Microban® Technology are high-performance cementitious mortars designed for the trenchless renewal of underground pipes without disturbing the pipe. Both are high strength, single component, fiber-reinforced hydraulic repair materials. Five Star Centri-Cast Pipe Repair Mortar HS products provide sealing, rehabilitation and corrosion protection of existing underground metal and concrete pipes and is a quick and economical pipe repair solution that creates a dense and highly impermeable repair coating. For added protection, Five Star Centri-Cast Pipe Repair Mortar HS w/Microban® Technology is infused with an antimicrobial agent to guard against the growth of mold and mildew. Five Star Centri-Cast Pipe Repair Mortar provides a structural repair by creating a new, continuous, cementitious pipe within an existing, properly designed and installed culvert.

ADVANTAGES

- Large volume applications
- Versatile ¼ inch (6 mm) to 1 inch (25 mm) single pass applications
- Centrifugally cast in place
- Fiber reinforced for crack resistance and strength
- Infused w/Microban® Technology extends the useful life of mortar by inhibiting deterioration caused by mildew
- Low chloride ion permeability

USES

- Trenchless repair of underground pipes
- New pipe corrosion protection
- Pipe rehabilitation, repair and protection

PACKAGING AND YIELD

Five Star Centri-Cast Pipe Repair Mortar HS and Five Star Centri-Cast Pipe Repair Mortar HS w/ Microban® Technology are packaged in 50 lb. (22.7 kg) heavy-duty polyethylene lined bags yielding approximately 0.45 cubic feet (12.7 liters) of hardened material at maximum water content. Bulk bags are available upon request.

TYPICAL PROPERTIES @ 70°F (21°C)

Compressive Strength,
ASTM C 109

- 1 Day 5,000 psi (34.5 MPa)
- 7 Days 9,000 psi (62.1 MPa)
- 28 Days 11,500 psi (79.3 MPa)

Bond Strength, ASTM C 882

- 28 Days Concrete Failure

Flexural Strength, ASTM C 293

1,500 psi (10.3 MPa)

Thermal Coefficient of
Expansion, ASTM C 531

5.5×10^{-6} in/in/°F

Chloride Ion Permeability,
ASTM C 1202

- 28 Days Very Low

Modulus of Elasticity,
ASTM C 469

- 28 Days 3.5×10^6 psi

Drying Shrinkage, ASTM C 157

- 28 Days Wet +0.05%
- 28 Days Dry -0.12%

Working Time at 70°F (21°C)

30 minutes

* Compressive Strength test specimens cast 20 minutes after initial mixing to replicate typical pumping, mixing and spray application on job site.

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown may result. Test methods are modified where applicable.

SHELF LIFE

One year in original unopened packaging when stored in dry conditions; high relative humidity will reduce shelf life.

PLACEMENT GUIDELINES

I. PREPARATION: Prepare all interior pipe surfaces with a high pressure water-blast to remove all laitance, loose material and oxidation, then flush all material from pipe. Rusted portions of corrugated steel pipe should be removed and replaced as necessary. Plug active leaks and fill voids; use either Five Star Centri-Cast, Five Star Structural Concrete or Five Star Structural Concrete V/O for invert/base replacement. Metal surfaces should be blasted clean using high-pressure water blast equipment. Concrete surfaces should be mechanically prepared

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to an ICRI Concrete Surface Profile (CSP) of 6 or greater. Metal surfaces may require treating with a corrosion inhibitor after any mechanical surface prep if they will not be repaired immediately.

2. **MIXING:** MINIMUM is 3.25 quarts (3.07 L). MAXIMUM is 4.0 quarts (3.78 L). Prewet mortar mixer and pump lines with water. With mixer running, start by adding 3.25 quarts of clean 50°F to 70°F (10°C to 21°C) water per 50 lbs. of Five Star Centri-Cast Pipe Repair Mortar HS to mixer. If mixing multiple bags, add all but last bag to mixer and allow material to mix 30 seconds before adding last bag. Adjust water as necessary after last bag is added. Up to 4.0 quarts per 50 lb. bag for hotter temperatures or longer pump distances. Total mix time is 3 minutes after last bag is added to mixer. Working time is approximately 30 minutes. Do not retemper the mix by adding more water.

3. **EQUIPMENT:** Standard mortar mixers, compressors and pumps are applicable. A high-speed rotating applicator device is required. Please contact Stonhard at (800) 263.3112 for equipment recommendations and detailed installation instructions.

4. **APPLICATION:** Position the spin cast applicator within the center of the pipe and commence pumping the mixed mortar to the spin caster. As the mortar begins to be centrifugally cast evenly around the interior, retrieve the applicator head at the best speed for applying the thickness that has been specified. If flows are interrupted for any reason, simply arrest the retrieval of the applicator head until flows are restored. The retrieval speed can be varied to create different thicknesses as the condition may dictate to provide sufficient strengths. Thickness may be verified at any point. If additional thickness is desired at any location, place the rotating applicator at that location and recommence pumping and retrieval until that area is thickened. The pressure application from the centrifugal casting of the mortar produces a finely textured surface that requires no additional troweling or finishing.

5. **PLACEMENT:** Keep pump lines cool by spraying with cold water when temperatures are 90°F (32°C) or higher. Transfer mixed Five Star Centri-Cast Pipe Repair Mortar HS from mixer to pump and immediately start next mix. Spray using spin-caster equipment with compressed air valve wide open. Apply in suitable thickness of 1/4 to 1 inch in single pass. Allow material to set and stiffen before applying subsequent pass.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to Design-A-Spec™ installation guidelines or call Stonhard at (800) 263.3112.

CONSIDERATIONS

- Never exceed the maximum water content as stated on the package or mix to a consistency which will cause segregation.
- Temperature of surfaces must be between 45°F and 90°F (7°C and 32°C) at time of placement. For cold and hot weather placement, contact Stonhard at (800) 263.3112.
- Repair mortar shall be protected from freezing until it reaches 1,000 psi (6.9 MPa).
- Product sets slower in cooler temperatures and faster in hotter temperatures.

CAUTION

Contains cementitious material and crystalline silica. The International Agency for Research on Cancer has determined that there is sufficient evidence for the carcinogenicity of inhaled crystalline silica to humans. Take appropriate measures to avoid breathing dust. Avoid contact with eyes and contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Immediately call a physician. Wash skin thoroughly after handling. Keep product out of reach of children. **PRIOR TO USE, REFER TO SAFETY DATA SHEET.**

For worldwide availability, additional product information and technical support, contact your local sales representative, or call Stonhard at (800) 263.3112.

WARRANTY: "FIVE STAR PRODUCTS, INC. (FSP) PRODUCTS ARE MANUFACTURED TO BE FREE OF MANUFACTURING DEFECTS AND TO MEET FSP'S CURRENT PUBLISHED PHYSICAL PROPERTIES WHEN APPLIED IN ACCORDANCE WITH FSP'S DIRECTIONS AND TESTED IN ACCORDANCE WITH ASTM AND FSP STANDARDS. HOWEVER, SHOULD THERE BE DEFECTS OF MANUFACTURING OF ANY KIND, THE SOLE RIGHT OF THE USER WILL BE TO RETURN ALL MATERIALS ALLEGED TO BE DEFECTIVE, FREIGHT PREPAID TO FSP, FOR REPLACEMENT. THERE ARE NO OTHER WARRANTIES BY FSP OF ANY NATURE WHATSOEVER, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH THIS PRODUCT. FSP SHALL NOT BE LIABLE FOR DAMAGES OF ANY SORT, INCLUDING PUNITIVE, ACTUAL, REMOTE, OR CONSEQUENTIAL DAMAGES, RESULTING FROM ANY CLAIMS OF BREACH OF CONTRACT, BREACH OF ANY WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FROM ANY OTHER CAUSE WHATSOEVER. FSP SHALL ALSO NOT BE RESPONSIBLE FOR USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT HELD BY OTHERS."

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