



Centri-Cast® Pipe Repair Mortar

Centrifugally Cast, Fiber-Reinforced Hydraulic Repair Material

(AVAILABLE WITH MICROBAN® TECHNOLOGY)

PRODUCT DESCRIPTION

Five Star Centri-Cast® Pipe Repair Mortar is a high-performance repair mortar that provides a structural repair by creating a new, continuous, cementitious pipe within an existing, properly designed and installed culvert. This single component, fiber-reinforced hydraulic repair material is capable of making repairs without disturbing the pipe. Five Star Centri-Cast® Pipe Repair Mortar provides sealing, rehabilitation and corrosion protection of existing underground metal and concrete pipes and is a quick and economical pipe repair solution. For added protection, Five Star Centri-Cast® Pipe Repair Mortar with Microban® Technology is infused with an antimicrobial agent that inhibits deterioration caused by MIC (microbiologically induced corrosion).

ADVANTAGES

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

USES

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

PACKAGING AND YIELD

Five Star Centri-Cast® Pipe Repair Mortar and Five Star Centri-Cast® Pipe Repair Mortar 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.

SHELF LIFE

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

TYPICAL PROPERTIES AT 70°F (21°C)

Compressive Strength, ASTM C 109*

1 Day	3,000 psi (20.7 MPa)
7 Days	6,000 psi (41.4 MPa)
28 Days	8,000 psi (55.2 MPa)

Bond Strength, ASTM C 882

28 Days	2,000 psi (13.8 MPa)
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Flexural Strength, ASTM C 348

1,300 psi (9.0 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
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Modulus of Elasticity, ASTM C 469

3.35×10^6 psi

Drying Shrinkage, ASTM C 157

28 Days Wet	+0.05%
28 Days Dry	-0.15%

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.



PLACEMENT GUIDELINES

1. **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 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: WATER CONTENT: MINIMUM is 2.50 quarts (2.37 L). MAXIMUM is 3.25 quarts (3.07 L).** Prewet mortar mixer and pump lines with water. With mixer running, start by adding 2.50 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 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. Typically, 2.50 to 3.25 quarts per 50 lb. bag of Five Star Centri-Cast® Pipe Repair Mortar is suggested. Up to 3.25 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 Five Star Products' Engineering and Technical Center at 1-800-243-2206 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 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 the Five Star® Design-A-Spec™ installation guidelines or call Five Star Products' Engineering and Technical Center at 1-800-243-2206.

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, call Five Star Products' Engineering and Technical Service Center at 1-800-243-2206.
- 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. 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 Five Star® distributor, local sales representative, or call Five Star Products' Engineering and Technical Center at 1-800-243-2206.

SKU / PRODUCT CODE	DESCRIPTION	#UNITS/PALLET	UNIT SIZE
12100	Five Star Centri-Cast® Pipe Repair Mortar	56	50 lb. (22.7 kg) Bag
12150	Five Star Centri-Cast® Pipe Repair Mortar w/ Microban® Technology	56	50 lb. (22.7 kg) Bag
Call Customer Service	Five Star Centri-Cast® Pipe Repair Mortar	1	Bulk Bag

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