



# **STRUCTURAL CONCRETE GUNITE**

Fast Turnaround, Dry Process Shotcrete Repair

## **PRODUCT DESCRIPTION**

Five Star Structural Concrete® Gunitite is a dry process, shotcrete applied, high early strength permanent concrete repair material. Five Star Structural Concrete Gunitite produces a repair which is dimensionally stable, develops an integral bond to the existing concrete, and restores structural integrity within hours of placement. Moisture sensitive coatings can be applied in 8 to 24 hours.

## **ADVANTAGES**

- Single component
- High three hour strengths
- Vertical and overhead repairs
- Excellent resistance to sulfates
- Cold weather installation
- Excellent freeze/thaw resistance
- High bond strength
- Very low chloride ion permeability
- Application thickness down to 1/4 inch (6 mm)
- Can be coated in 8 to 24 hours

## **USES**

- Rapid repair of load bearing walls, ceilings and other structural members
- Rapid repairs during shutdown
- Rapid structural repair for industrial plants
- Marine and hydraulic structure repairs
- Cold weather repair

## **PACKAGING AND YIELD**

Five Star Structural Concrete Gunitite is packaged in heavy-duty polyethylene lined bags and is available in 50 lb (22.7kg) units yielding approximately 0.42 cubic feet (11.9 liters) at maximum water.

## **SHELF LIFE**

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

<b>TYPICAL PROPERTIES AT 70°F (21°C)</b>	
<b>Compressive Strength, ASTM C 109</b>	
3 Hours	2500 psi (17.3 MPa)
1 Day	4000 psi (27.6 MPa)
28 Days	6000 psi (41.4 MPa)
<b>Compressive Strength, ASTM C 42 in accordance with ACI 506R-90</b>	
3 Days	5000 psi (34.5 MPa)
7 Days	5800 psi (40.0 MPa)
28 Days	7000 psi (48.3 MPa)
<b>Bond Strength, ASTM C 882</b>	
1 Day	2000 psi (13.8 MPa)
<b>Linear Length Change, ASTM C 157</b>	
28 Days Wet	+0.03%
28 Days Dry	-0.05%
<b>Thermal Coefficient of Expansion, ASTM C 531</b>	
5.0 x 10 <sup>-6</sup> in/in/°F (9.0 x 10 <sup>-6</sup> mm/mm/°C)	
<b>Chloride Ion Permeability, ASTM C 1202</b>	
28 Days	Very Low ( <1000 Coulombs)
<b>Working Time at 70°F (21°C)</b>	
10 minutes	

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

## **PLACEMENT GUIDELINES**

1. **SURFACE PREPARATION:** All concrete surfaces in contact with Five Star Structural Concrete® Gunitite shall be free of oil, grease, laitance, and other contaminants. Concrete must be clean, sound and rough to ensure a good bond. Remove all oxidation from exposed reinforcing steel and for additional protection coat reinforcing steel with Five Star® AC Coat. A perimeter edge and minimum depth of 1/4 inch (6 mm) should be provided for a durable repair. Soak concrete surfaces prior to application with liberal quantities of potable water leaving the concrete saturated and free of standing water. Surfaces shall be conditioned to between 35°F and 90°F (2°C and 32°C) at time of placement.
2. **MIXING:** The mixing equipment should be capable of maintaining continuous placement and equipped with a screen to avoid plug-ups. **DRY MIX PROCESS:** Pre-dampen Five Star Structural Concrete Gunitite either in a mortar mixer prior to placement into gun or with a pre-hydration water ring. Avoid over dampening material. Do not pre-dampen more material than can be placed within ten minutes. Adjust consistency at nozzle.
3. **METHODS OF PLACEMENT:** Apply Five Star Structural Concrete Gunitite to full design thickness whenever possible. Overhead placement is applied in layers thick enough to prevent sagging. Direct nozzle perpendicular to surface and rotate in a series of circular patterns, filling all inside corners first. Five Star Structural Concrete Gunitite should emerge from the nozzle in a uniform, uninterrupted flow. Finish to desired texture with screed, float, trowel, or brush. For more detailed application procedures, refer to ACI 506R-90, Guide to Shotcrete Report.
4. **POST-PLACEMENT PROCEDURES:** Five Star Structural Concrete Gunitite shall be kept wet for one-half to four hours, depending on the volume and depth of the placement. Wet curing shall begin as soon as the material is thumb-print hard.

**NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed placement procedures, refer to Design-A-Spec™ installation guidelines or call the Five Star Products Engineering and Technical Service Center at (800) 243-2206.

## **CONSIDERATIONS**

- Temperature of materials, equipment and surfaces must be between 35°F and 90°F (2°C and 32°C) at time of placement. For cold and hot weather procedures, refer to Design-A-Spec™.
- Never exceed the maximum water content as stated on the package.
- Minimum application thickness is 1/4 inch (6 mm). For larger applications and thicknesses greater than three inches (75 mm), contact Five Star's Engineering and Technical Service Center at (800) 243-2206.
- Substrate shall be free of frost and ice.
- Repair material shall be protected from freezing until a compressive strength of at least 1000 psi (6.9 MPa) is reached

## **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 MATERIAL SAFETY DATA SHEET.**

For worldwide availability, additional product information and technical support, contact your local Five Star distributor, local sales representative, or you may call Five Star's Engineering and Technical Service Center at (800) 243-2206.

**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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