



FIVE STAR STRUCTURAL CONCRETE® GUNITE

High Early Strength Shotcrete Repair

PRODUCT DESCRIPTION

Five Star Structural Concrete® Gunite is a dry process, shotcrete applied, high early strength, one component, permanent concrete repair material. Five Star Structural Concrete Gunite 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

- Low rebound
- High three hour strength gains
- Vertical and overhead repairs
- Excellent resistance to sulfates
- Cold weather installation
- High bond strength
- Very low chloride ion permeability
- Minimum application thickness is 1/4 inch (6 mm)
- Provides permanent concrete repair
- 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

TECHNICAL SUPPORT

Five Star Products maintains the industry's foremost Technical Support Group:

- Over 30 years of experience in concrete repair
- Technical Center staffed with experienced engineers available for consultation
- Design-A-Spec™ for engineering specification assistance
- Experienced representatives for field service
- Corporate research laboratory available to customize products for unique applications

PACKAGING AND YIELD

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

SHELF LIFE

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

| TYPICAL PROPERTIES AT 73°F (23°C) | |
|--|---|
| Compressive Strength, ASTM C 109 | |
| 3 Hours | 2500 psi (17.3 MPa) |
| 1 Day | 4000 psi (27.6 MPa) |
| 28 Days | 6000 psi (41.4 MPa) |
| Compressive Strength, ASTM C 42 in accordance with ACI 506R-90 | |
| 3 Days | 5000 psi (34.5 MPa) |
| 7 Days | 5800 psi (40.0 MPa) |
| 28 Days | 7000 psi (48.3 MPa) |
| Bond Strength, ASTM C 882 | |
| 1 Day | 2000 psi (13.8 MPa) |
| Linear Length Change, ASTM C 157 | |
| 28 Days Wet | +0.03% |
| 28 Days Dry | -0.05% |
| Thermal Coefficient of Expansion, ASTM C 531 | 5.0 x 10 ⁻⁶ in/in/°F (9.0 x 10 ⁻⁶ mm/mm/°C) |
| Chloride Ion Permeability, ASTM C 1202 | |
| 28 Days | Very Low (<1000 Coulombs) |



The data shown above reflect 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 surfaces in contact with Five Star Structural Concrete® Gunite 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. Featheredging is not desirable for structural repairs. 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: Predampen Five Star Structural Concrete Gunite either in a mortar mixer prior to placement into gun or with a prehydration water ring. Avoid over dampening material. Do not predampen more material than can be placed within ten minutes. Adjust consistency at nozzle.
3. **PLACEMENT:** Apply Five Star Structural Concrete Gunite 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 Gunite 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 Gunite 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 hard.
NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to Design-A-Spec™ or call the Five Star Products Technical Center at (800) 243-2206.

LIMITATIONS

- 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 of 1/4 inch (6 mm). For larger applications and thicknesses greater than three inches (75 mm), contact Five Star Products Technical Center.
- Substrate shall be free of frost and ice.
- Repair material shall be protected from freezing until it reaches 1000 psi (6.9 MPa).

CAUTION

Contains cementitious material and crystalline silica. International Agency for Research on Cancer has evaluated 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 Technical Center at (800) 243-2206.



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