FIVE STAR STRUCTURAL CONCRETE®

Fast, High Early Strength Permanent Repair

PRODUCT DESCRIPTION

Five Star Structural Concrete is a high early strength, one component, low shrinkage permanent concrete repair material. Formulated with patented technology, Five Star Structural Concrete produces a repair which is dimensionally stable, develops an integral bond to the existing concrete, and restores structural integrity within hours of placement. Application thickness can range from 1/4 inch to 12 inches (6 mm to 300 mm) in a single pour. Five Star Structural Concrete provides increased corrosion protection of steel reinforced structures with a very low chloride ion permeability. Moisture sensitive coatings can be applied in 8 to 24 hours.

ADVANTAGES

- One component for reliability and ease of use
- High three hour strengths
- Adjustable working time
- Very low chloride ion permeability
- Short turnaround times
- Can be coated in 8 to 24 hours
- High bond strength
- Coarse aggregate extension
- Low shrinkage
- Excellent resistance to sulfates
- One product for thin and thick placements
- Cold weather installation

USES

- General repair of concrete structures
- Rapid machinery foundation rebuilds
- Fast repairs for coatings
- Concrete floor toppings and overlays
- Construction joint repair
- Marine and hydraulic structure repairs
- Repair of tanks, sumps and curbs
- Cold weather repairs

TECHNICAL SUPPORT

Five Star Products maintains the industry's foremost Engineering and 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 is packaged in heavy-duty polyethylene lined bags or plastic pails each containing 50 lb (22.7 kg) yielding 0.42 cubic feet (11.9 liters) at maximum water or 0.60 cubic feet (17.0 liters) with a 60% extension of 3/8" pea gravel.

SHELF LIFE

One year in bags and two years in pails 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	5000 psi (34.5 MPa)
7 Days	7000 psi (48.3 MPa)
28 Days	8000 psi (55.2 MPa)
Bond Strength, ASTM C 882	
1 Day	2000 psi (13.8 MPa)
7 Days	2500 psi (17.3 MPa)
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)
Scaling Resistance, ASTM C 672	
50 cycles	0
Chloride Ion Permeability, ASTM C 1202	
3 Days	Very Low (<1000 Coulombs)
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 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 the time of placement.
2. MIXING: Mix Five Star Structural Concrete thoroughly for approximately five minutes with a mortar mixer or drill and paddle mixer. Adjust consistency if necessary. Do not exceed maximum recommended amount of mixing water as stated on the package or add an amount that will cause segregation. Do not mix more material than can be placed in 15 minutes. Addition of coarse aggregate, meeting ASTM C 33, should be used for pours greater than two inches (50 mm) in depth.
3. PLACEMENT PROCEDURES: Whenever possible, place Five Star Structural Concrete full depth from one side of the repair to the other. To ensure complete contact, work material into substrate. Where this is not practical, placement must be continuous to prevent cold joints between pours. Finish as necessary.
   SPECIAL CONDITIONS: For use in cold temperatures, Five Star Structural Concrete must be maintained at a temperature of at least 35°F (2°C). Protect from freezing until a compressive strength of at least 1000 psi (6.9 MPa) is obtained. Faster strength gain will occur when the Five Star Structural Concrete and mixing water have been conditioned to a higher temperature prior to placement.
   In hot temperatures, Five Star Structural Concrete should be kept as cool as possible, but not exceeding 90°F (32°C). Ice cold water should be used for mixing to help maintain sufficient working time. Summerset® may also be used if necessary to provide more working time.
4. POST-PLACEMENT PROCEDURES: Five Star Structural Concrete 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 has set.
   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 Engineering and Technical Center at 800-243-2206.

LIMITATIONS

- Never exceed the maximum water content as stated on the package or add an amount that will cause segregation.
- Temperature of surfaces must be between 35°F and 90°F (2°C and 32°C) at time of placement. For cold and hot weather placement, refer to Design-A-Spec™.
- Substrate shall be free of frost and ice.
- Repair material shall be protected from freezing until it reaches 1000 psi (6.9 MPa).
- For placements thicker than two inches (50 mm) and a volume exceeding two cubic feet (56.5 liters), contact the Five Star Products Engineering and Technical Center at 800-243-2206.
- Placement shall be continuous to avoid cold joints.

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 Engineering and Technical Center at 800-243-2206.

Corporate Offices
Five Star Products, Inc.
750 Commerce Drive
Fairfield, CT 06825
Tel: 203-336-7900
Fax: 203-336-7930
www.fivestarproducts.com

American Owned & Operated