



STRUCTURAL CONCRETE S300

Long Working Time Permanent Repair

PRODUCT DESCRIPTION

Five Star Structural Concrete® S300 is a normal setting, one component, enhanced hydraulic cement mortar used for pourable and pumpable repairs of concrete structures. Five Star Structural Concrete S300 may be extended with coarse aggregate for large volume repairs and foundation upgrades. Five Star Structural Concrete S300 provides increased corrosion protection of steel reinforced structures with a very low chloride ion permeability.

ADVANTAGES

- Large volume repairs
- 60 minute working time
- Very low chloride ion permeability
- Pumpable
- Available in 3000 lb bulk bag packaging
- Coarse aggregate extension
- One day turnaround
- Excellent freeze/thaw resistance

USES

- Repair of concrete structures
- Industrial floors, slabs and overlays
- Equipment foundations
- Repair of tanks, sumps and curbs
- Ready-mix concrete truck batching
- Structural fortifications

PACKAGING AND YIELD

Five Star Structural Concrete S300 is packaged in heavy-duty polyethylene lined bags and is available in 50 lb (22.7 kg) units yielding approximately 0.40 cubic feet (11.3 liters) at maximum water, or 0.60 cubic feet (17.0 liters) with a 70% extension using 3/8" pea gravel. Five Star Structural Concrete S300 is also available in 3,000 lb. (1360 kg) bulk bags.

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 | 3500 psi (24.2 MPa) |
| 3 Days | 5000 psi (34.2 MPa) |
| 7 Days | 6500 psi (44.8 MPa) |
| 28 Days | 8000 psi (55.2 MPa) |
| Bond Strength, ASTM C 882 | |
| 7 Days | 2300 psi (15.9 MPa) |
| Time of Set, ASTM C 266 | |
| Initial Set | 5 Hours (approximately) |
| Final Set | 6 Hours (approximately) |
| Linear Length Change, ASTM C 157 | |
| 28 Days Wet | +0.03% |
| 28 Days Dry | -0.05% |
| Chloride Ion Permeability, ASTM C 1202 | |
| 28 Days | Very Low (<1000 Coulombs) |
| Working Time at 70°F (21°C) | 60 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 horizontal and vertical concrete surfaces in contact with Five Star Structural Concrete S300 shall be free of oil, grease, laitance, and other contaminants. All horizontal and vertical concrete surfaces 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 one inch (25 mm) should be provided for a durable repair. Featheredging is not desirable. Soak concrete surfaces prior to application with liberal quantities of potable water, leaving the concrete saturated and free of standing water, or use Five Star® Bonding Adhesive. Surfaces shall be conditioned to between 35°F and 90°F (7°C and 32°C) at the time of placement.
2. **FORMWORK:** Formwork shall be constructed of rigid non-absorbent materials, securely anchored, liquid-tight and strong enough to resist forces developed during placement. Areas where bond is not desired must be treated with form oil, paste wax or similar material. Joints may be necessary depending on pour dimensions. Any existing joints within the repair area should be maintained. Contact the Five Star Engineering and Technical Service Center for further information.
3. **MIXING:** Wet down mortar mixer (stationary barrel with moving blades) before using and drain excess water. A drill and paddle mixer is acceptable for single bag mixes. With the mixer running add approximately 80% of the pre-measured potable water (total water content is 2 1/4 to 3 quarts potable water per 50 lb. unit) to the mixer. While mixing, slowly add Five Star Structural Concrete S300 and mix to a uniform consistency for three to four minutes. Adjust consistency if necessary, but do not exceed maximum water content stated on the package or an amount that will cause segregation. Add clean, damp course aggregate meeting ASTM C 33 before final water adjustment. Do not mix more material than can be placed within 60 minutes. For larger quantities, a ready-mix concrete truck may be used.
4. **PLACEMENT PROCEDURES:** Whenever possible, place Five Star Structural Concrete S300 full depth from one side of the repair to the other. To ensure optimal bond development, firmly work material into substrate. Placement should be continuous to prevent cold joints between pours. Finish as necessary.

SPECIAL CONDITIONS: For use in cold temperatures, Five Star Structural Concrete S300 must be maintained at a temperature of at least 45°F (7°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 S300 and mixing water have been conditioned to a higher temperature prior to placement. In hot temperatures, Five Star Structural Concrete S300 should be kept as cool as possible, but not exceeding 90°F (32°C).

5. **POST-PLACEMENT PROCEDURES:** Five Star Structural Concrete S300 shall be protected from moisture loss until initial set, then immediately coated with an approved curing compound meeting water retention properties of ASTM C 309 or wet cured for a minimum of three days. In-service operation may begin immediately after the required strength has been reached.

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 Engineering and Technical Service Center at (800) 243-2206.

CONSIDERATIONS

- Never exceed the maximum recommended amount of mixing water as stated on the package or add an amount that will cause segregation.
- Under high evaporative conditions, an evaporation retarder or water fogging must be used prior to curing.
- For ready-mix truck mixing guidelines, contact the Five Star Engineering and Technical Service Center at (800) 243-2206.

CAUTION Irritant, toxic, strong sensitizer. 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.

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