



# FIVE STAR STRUCTURAL CONCRETE® V/O

Vertical/Overhead Permanent Repair

## PRODUCT DESCRIPTION

Five Star Structural Concrete V/O is a high strength, one component, permanent concrete repair material for vertical and overhead structural repairs. Five Star Structural Concrete V/O produces a repair which is dimensionally stable, develops an integral bond to the existing concrete, and restores structural integrity within hours of placement. Five Star Structural Concrete V/O has a very low chloride ion permeability. Moisture sensitive coatings can be applied in 8 to 24 hours.

## ADVANTAGES

- Can be troweled vertically or overhead
- Very low chloride ion permeability
- High three hour strength gains
- Can be coated in 8 to 24 hours
- Cold weather installation
- One product for thin and thick placements
- Resistance to sulfates
- Adjustable working time

## USES

- Rapid repair of load bearing walls, ceilings and other structural members
- Cold weather repairs
- Rapid repairs during shutdown
- Marine and hydraulic structure 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 V/O is packaged in heavy-duty polyethylene lined bags or plastic pails each containing 50 lb (22.7 kg) yielding 0.44 cubic feet (12.5 liters) at maximum water.

## 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	2000 psi (13.8 MPa)
1 Day	3500 psi (24.2 MPa)
7 Days	4000 psi (27.6 MPa)
28 Days	5000 psi (34.5 MPa)
Bond Strength, ASTM C 882	
1 Day	1500 psi (10.4 MPa)
7 Days	2000 psi (13.8 MPa)
Linear Length Change, ASTM C 157	
28 Days Wet	+0.04%
28 Days Dry	-0.05%
Thermal Coefficient of Expansion, ASTM C 531	5.0 x 10 <sup>-6</sup> in/in/°F (9.0 x 10 <sup>-6</sup> mm/mm/°C)
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 V/O 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 V/O for approximately three to five minutes to a uniform consistency with a mortar mixer or heavy-duty drill and paddle mixer. Do not exceed maximum recommended amount of mixing water stated on the package. Do not mix more material than can be placed in 15 minutes.
3. **PLACEMENT PROCEDURES:** Work a small amount of Five Star Structural Concrete V/O into concrete surface. Then apply with trowel taking care not to leave air pockets. Application is from one side of the repair to the other, filling the repair to the desired level. Roughen surface between lifts. Finish as necessary.
4. **POST-PLACEMENT PROCEDURES:** Five Star Structural Concrete V/O shall be kept wet for at least 30 minutes immediately after hardening.  
**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 stated on the package.
- 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 placement, consult 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).

## 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.**

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, EXPRESSED 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."

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

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