



# **HIGH STRENGTH GROUT**

High Strength Precision Non-Shrink Grout

## **PRODUCT DESCRIPTION**

**Five Star® High Strength Grout** is the industry's leading cement-based, non-metallic, non-shrink grout for supporting machinery and applications requiring precision alignment. It is formulated with Air Release technology that combines high performance with the greatest reliability. When tested in accordance with ASTM C 827, Five Star® High Strength Grout exhibits positive expansion and meets the performance requirements of ASTM C 1107-02 Grades A, B and C, ASTM C 1107-07, and CRD-C 621-93 specifications for non-shrink grout over a wide temperature range, 40°F - 90°F (4°C - 32°C).

## **ADVANTAGES**

- Ultra-high 1, 7, and 28 day compressive strengths
- 95% effective bearing area (EBA)
- Can be poured, wet set or dry packed
- Permanent support for machinery requiring precision alignment
- Non-shrink from the time of placement

## **USES**

- Grouting of machinery and equipment under high loads
- Non-shrink grouting of structural steel and precast concrete
- Support of tanks and vessels
- Wind turbines
- Compressors and turbo equipment
- Grouting of anchors and dowels

## **PACKAGING AND YIELD**

Five Star® High Strength Grout is packaged in heavy-duty, 50 lb. (22.7 kg) polyethylene lined bags yielding approximately 0.40 cubic feet (11.3 liters) of hardened material at maximum water content.

## **SHELF LIFE**

One year 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>		
	Flowable	Wet Set
<b>Early Height Change, ASTM C 827</b>	0.0 to 4.0%	0.0 to 4.0%
<b>Hardened Height Change, ASTM C 1090</b>	0.0 to 0.3%	0.0 to 0.3%
<b>Effective Bearing Area</b>	95%	95%
<b>Bond Strength, ASTM C 882 / 28 Days</b>	2,000 psi (13.8 MPa)	2,000 psi (13.8 MPa)
<b>Pull-out Strength, Shear Bond with #5 deformed bar, 7 days</b>	2,400 psi (16.6 MPa)	2,400 psi (16.6 MPa)
<b>Compressive Strength, ASTM C 942 (C109 Restrained)</b>		
1 Day	5,000 psi (34.5 MPa)	7,000 psi (48.3 MPa)
7 Days	11,000 psi (75.8 MPa)	12,000 psi (82.7 MPa)
28 Days	13,000 psi (89.6 MPa)	15,000 psi (103.4 MPa)
<b>Working Time at 70°F (21°C)</b>	20 minutes	20 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 surfaces in contact with Five Star® High Strength Grout shall be free of oil, grease laitance and other bond-inhibiting contaminants. Concrete should be mechanically roughened to coarse aggregate exposure to maximize bond. A Concrete Surface Profile (CSP) of 6-9 in accordance with ICRI Technical Guideline 310.2R is recommended. Presoak concrete surfaces for 8 to 24 hours, continuously and consistently, via wet rags, wet burlap, ponding or similar method.
- 2. FORMWORK:** Formwork shall be constructed of rigid non-absorbent materials, securely anchored, liquid-tight and strong enough to resist forces developed during grout placement. The clearance between formwork and baseplate shall be sufficient to allow for a headbox. The clearance for remaining sides shall be one to two inches (25 - 50 mm). Areas where bond is not desired must be treated with form oil, paste wax or similar material. Isolation joints may be necessary depending on pour dimensions. Contact Five Star Products' Engineering and Technical Center for further information.
- 3. MIXING:** Mix Five Star® High Strength Grout thoroughly for approximately four to five minutes to a uniform consistency with a mortar mixer (stationary barrel mixer with moving blades). For optimum performance, maintain grout at ambient temperatures between 40°F and 90°F (4°C and 32°C). Use heated or chilled water to help adjust working time. Mix Five Star® High Strength Grout with 2¾ to 3¼ (2.6L to 3.1L) quarts potable water per 50 lb. bag. Working time is approximately 20 minutes at 70°F (21°C). Follow printed instructions on the package. Always add mixing water first to mixer followed by grout. Do not mix more grout than can be placed within 20 minutes.
- 4. METHODS OF PLACEMENT:** Five Star® High Strength Grout may be dry packed, wet set or poured into place. Minimum placement thickness for Five Star® High Strength Grout is one inch (25 mm). For pours over 6 inches (150 mm) in depth Five Star® High Strength Grout should be extended with a clean damp coarse aggregate meeting the requirements of ASTM C 33. Refer to the Five Star® Technical Bulletin "Cement Grout Aggregate Extension" for guidelines. For more detailed placement procedures, go to FiveStarProducts.com and select Design-A-Spec™ in product downloads.
- 5. POST-PLACEMENT PROCEDURES:** Five Star® High Strength Grout shall be wet cured for a minimum of three days, or coated with an approved curing compound meeting the requirements of ASTM C 309 after a minimum 24 hour wet cure. In-service operation may begin immediately after the required grout strength has been reached.

**NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed placement procedures, refer to the Five Star® Design-A-Spec™ installation guidelines or call Five Star Products' Engineering and Technical Service Center at 1-800-243-2206.

## **CONSIDERATIONS**

- At time of placement, if temperatures of equipment and surfaces are not between 40°F and 90°F (4°C and 32°C), refer to Five Star® Design-A-Spec™ for cold and hot weather grouting procedures or call Five Star Products' Engineering and Technical Service Center.
- Never exceed the maximum water content as stated on the bag or add an amount that will cause segregation.
- Construction practices dictate concrete foundation should achieve its design strength before grouting.
- Cold temperatures will delay strength development.
- Cement Based grout should attain a minimum compressive strength of 1,000 psi (6.9 MPa) before being exposed to freezing temperatures.

## **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 SAFETY DATA SHEET.**

For worldwide availability, additional product information and technical support, contact your local Five Star® distributor, local sales representative, or call Five Star Products' Engineering and Technical Service Center at 1-800-243-2206.

<b>SKU/PRODUCT CODE</b>	<b>DESCRIPTION</b>	<b># UNITS/PALLET</b>	<b>UNIT SIZE</b>
42000	Five Star® High Strength Grout	56	50 lb. (22.7 kg) bag

**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."

Specifications Subject to Change.

For most current version of datasheet, go to FiveStarProducts.com

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