



# **FIVE STAR® GROUT**

High Performance Precision Non-Shrink Grout  
formerly Five Star® Grout 501

## **PRODUCT DESCRIPTION**

**Five Star® Grout** is the industry's leading cement-based, nonmetallic, non-shrink grout for supporting machinery and equipment. 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® Grout exhibits positive expansion. Five Star® Grout meets the performance requirements of ASTM C 1107-02 Grades A, B and C, ASTM C 1107-20, and CRD-C 621-93 specifications for non-shrink grout over a wide temperature range, 4°C - 32°C.

## **ADVANTAGES**

- Air Release technology equals: Controlled Expansion - Plastic State; Dimensional Stability - Hardened State
- 95% Effective Bearing Area (EBA) is typically achieved following proper grouting procedures
- Provides placement versatility: pour, pump, or dry pack
- 45 minute working time
- Permanent support for machinery requiring precision alignment
- Does not contain metallic gas generating additives, such as aluminum powder
- Non-shrink from the time of placement
- High early and ultimate compressive strengths

## **USES**

- Grouting of machinery and equipment to maintain precision alignment
- Non-shrink grouting of structural steel and precast concrete
- Support of tanks and vessels
- Gap thickness of 12-160 mm

## **PACKAGING AND YIELD**

Five Star® Grout is packaged in heavy-duty, plastic bags and is available in 25 kg units yielding approximately 14 liters of hardened material at maximum water content.

## **SHELF LIFE**

18 months in original unopened packaging when stored in dry conditions; high relative humidity will reduce shelf life.

<b>TYPICAL PROPERTIES AT 25°C</b>		
<b>Early Height Change, ASTM C 827</b>	0.0 to 4.0%	
<b>Hardened Height Change, ASTM C 1090</b>	0.0 to 0.3%	
<b>Effective Bearing Area</b>	≥ 95%	
<b>Bond Strength, ASTM C 882, 28 Days</b>	14 MPa	
<b>Compressive Strength, ASTM C 942 (C109 Restrained)</b>	<b>Fluid Consistency<sup>1</sup></b>	<b>Plastic Consistency<sup>2</sup></b>
1 Day	20 MPa	30 MPa
7 Days	45 MPa	60 MPa
28 Days	55 MPa	70 MPa
<b>Working Time</b>	45 minutes	
May be affected by colder & warmer temperatures <sup>3</sup>		

<sup>1</sup> 20 to 40 second flow (fluid consistency) ASTM C 939-02 (Corps of Engineers Flow Cone Method, CRD-C 611.)

<sup>2</sup> 80% - 125% flow on flow table (plastic consistency), CRD-C 621 (ASTM C230, 5 drops in 3 seconds).

<sup>3</sup> Refer to Five Star® Technical Bulletins: 101 *Cementitious Grouting in Cold Weather*; 102 *Cementitious Grouting in Hot Weather*

*The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown may result. Test methods are modified where applicable.*

## APPLICATION INFORMATION

<b>Mixing Ratio</b>	4.25 - 5.25 L potable water per 25 kg bag	<b>Minimum Plate Clearance</b>	12 mm
<b>Maximum In-Service Temperature</b>	204°C	<b>Placement Depth</b>	12 mm - 160 mm >160 mm, call Five Star

## PLACEMENT GUIDELINES

At time of placement, if temperatures of equipment and surfaces are not between 4°C and 35°C, contact Five Star Products for cold and hot weather grouting procedures. For atmospheric temperature above 35°C, working and setting times will be reduced and grout may dry prematurely without proper curing. Atmospheric temperatures below 20°C will slow setting time and strength development. Provide conditioning, either cooling or heating, plus curing as necessary in temperature extremes.

- SURFACE PREPARATION:** Construction practices dictate concrete foundation should achieve its design strength before grouting. All surfaces in contact with Five Star® Grout shall be clean and free of oil, grease laitance and other bond-inhibiting contaminants. To maximize bond, concrete surfaces should be prepared by acceptable means to coarse aggregate exposure. Presoak with potable water concrete surfaces for a minimum of 8 hours, continuously and consistently, via wet rags, wet burlap, ponding, or similar method to obtain a saturated surface dry (SSD) condition.
- FORMWORK:** Formwork should be constructed 24-hours prior to the pour. 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 to be placed between the edge of the baseplate and the form. The clearance for remaining sides shall be 25 - 50 mm. Formwork and areas where bond is not desired must be treated with form oil, paste wax or similar material. Isolation/construction joints may be necessary depending on pour dimensions.
- MIXING: Mortar Mixer (stationary barrel with moving blades):** Start with approximately 4.25 liters of potable water per 25 kg bag in the mixer. Add Five Star® Grout and mix for about 2 – 3 minutes after the addition of the final bag to a uniform consistency. Add additional potable water as necessary to achieve desired flow mixing for an additional 1 – 2 minutes after final addition of potable water. For fluid consistency, only add the amount of potable water needed to achieve a 20 – 40 second flow through a flow cone.\* Do not exceed the maximum recommended amount of potable mixing water as directed or add an amount that will cause segregation.  
**Single Bag Mixing Drill and Paddle:** Start with approximately 4.5 liters of potable water in the mix vessel. Add approximately 75-80% of Five Star® Grout to the potable water and mix to uniform consistency only until grout easily wets out, then add the remaining grout and continue to mix to a uniform consistency. Add additional potable water as needed to achieve desired flow, mixing for an additional 1 – 2 minutes after final addition of potable water. For fluid consistency, only add that amount of potable water needed to achieve a 20 – 40 second flow through a flow cone.\* Do not exceed the maximum recommended amount of potable mixing water as directed or add an amount that will cause segregation.  
\* Fluidity Test: 20 – 40 second flow through a flow cone as referenced by ASTM C939-02 (Corps of Engineers Flow Cone Method, CRD-C 611).  
For pours over 160 mm in depth contact Five Star Products for aggregate extension recommendations. For bulk mixing applications, contact Five Star Products.
- PLACEMENT:** Five Star® Grout may be dry packed, poured, or pumped into place. Placement should always be across the shortest distance. A headbox is recommended for pouring applications. Refer to Five Star® Technical Bulletin 108 *Grout Headbox & Plunger*.
- POST-PLACEMENT PROCEDURES:** Five Star® Grout shall be wet cured with potable water for a minimum of 24 hours. After initial 24-hour wet cure, grout can be coated with an approved curing compound. If curing compound is not used, grout shall be wet cured for an additional 48 hours totaling 3 days. During the curing process, protect the grout from direct sun and wind exposure. Do not allow product to freeze until it reaches 7 MPa compressive strength. In-service operation may begin immediately after the required grout strength has been reached.

**PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed information contact Five Star Products.

## HEALTH AND SAFETY

Contains cementitious material. May produce an allergic reaction. 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, READ THE SAFETY DATA SHEET.**

SKU/PRODUCT CODE	DESCRIPTION	#UNITS/PALLET	UNIT SIZE
25510	Five Star® Grout	40	25 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."

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