



# **FLUID GROUT 100**

High Performance Precision Non-Shrink Fluid Grout

## **PRODUCT DESCRIPTION**

Five Star® Fluid Grout 100 is the industry's leading cement-based, nonmetallic, non-shrink fluid 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® Fluid Grout 100 exhibits positive expansion. Five Star® Fluid Grout 100 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**

- Air release technology per ACI 351.1 R
- Placement within tight clearances down to 1/2 inch
- High 1, 7, 28 day strength
- Permanent support for machinery requiring precision alignment
- Does not contain gas generating additives, such as aluminum powder
- Non-shrink from the time of placement
- 95% Effective Bearing Area (EBA) is typically achieved following proper grouting procedures

## **USES**

- Grouting clearances to 1/2 inch
- Grouting of anchors and dowels
- Grouting of machinery and equipment to maintain precision alignment
- Non-shrink grouting of structural steel and precast concrete
- Preplaced aggregate grouting
- Support of tanks and vessels
- Available for Nuclear Safety Zone Applications<sup>1</sup>

## **PACKAGING AND YIELD**

Five Star® Fluid Grout 100 is packaged in heavy-duty, polyethylene lined bags and is available in 55 lb. (25 kg) units yielding approximately 0.50 cubic foot (14.1 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.

### **TYPICAL PROPERTIES AT 70°F (21°C)**

<b>Early Height Change</b> , ASTM C 827	0.0 to 4.0%	
<b>Hardened Height Change</b> , ASTM C 1090	0.0 to 0.3%	
<b>Effective Bearing Area</b>	95%	
<b>Bond Strength</b> , ASTM C 882	2,000 psi (13.8 MPa)/28 days	
<b>Pull-out Strength</b> , Tension, 125 ksi 1" threaded bar	2,000 psi (13.8 MPa)/7 days	
<b>Compressive Strength</b> , ASTM C 942 (C109 Restrained)	Minimum Water <sup>2</sup>	Maximum Water <sup>3</sup>
1 Day	5,800 psi (40 MPa)	3,500 psi (24.2 MPa)
3 Days	7,500 psi (51.8 MPa)	6,000 psi (41.4 MPa)
7 Days	8,000 psi (55.2 MPa)	6,500 psi (44.9 MPa)
28 Days	10,000 psi (69.0 MPa)	8,000 psi (55.2 MPa)
<b>Working Time</b> at 70°F (21°C)	30 minutes	

<sup>2</sup> 100% - 125% flow on flow table (plastic consistency), CRD-C 621 (ASTM C 230, 5 drops in 3 seconds).

<sup>3</sup> 20 to 30 second flow (fluid consistency) by Corps of Engineers Flow Cone Method, CRD-C 611.

*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.*

## PLACEMENT GUIDELINES

- SURFACE PREPARATION:** All surfaces in contact with Five Star® Fluid Grout 100 shall be free of oil, grease, laitance and other contaminants. Concrete must be clean, sound and roughened to ensure a good bond. Soak concrete surfaces for 8 to 24 hours prior to application with liberal quantities of potable water, leaving the concrete saturated and free of standing water.
- 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 the Five Star Products, Inc. Engineering and Technical Center for further information.
- MIXING:** Mix Five Star® Fluid Grout 100 thoroughly for approximately four to five minutes to a uniform consistency with a mortar mixer (stationary barrel with moving blades). A drill and paddle mixer is acceptable for single bag mixes. 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. Five Star® Fluid Grout 100 may be mixed to a flowable or fluid consistency. Begin by mixing Five Star® Fluid Grout 100 with 4 quarts potable water per 55 lb. bag. Mix for approximately three minutes. Add additional water as required to adjust consistency and continue mixing for two minutes. If a fluid consistency is required, add additional water to achieve a flow of 20 - 30 seconds through flow cone per ASTM C 939. If more than 6 quarts of water (per 55 lb. bag) must be added to achieve a 20 - 30 second flow, contact the Five Star Products, Inc. Engineering and Technical Center. Working time is approximately 30 minutes at 70°F (21°C). Follow printed instructions on the package. Always add mixing water first to mixer followed by grout.
- METHODS OF PLACEMENT:** Five Star® Fluid Grout 100 may be poured or pumped into place. Minimum placement thickness is 1/2 inch (12 mm) when mixed to a fluid consistency. For pours over 6 inches (150 mm) in depth Five Star® Fluid Grout 100 should be extended with a clean damp coarse aggregate meeting the requirements of ASTM C 33. Refer to the Five Star Products, Inc. Technical Bulletin "Cement Grout Aggregate Extension" for guidelines.
- POST-PLACEMENT PROCEDURES:** Five Star® Fluid Grout 100 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 Design-A-Spec™ installation guidelines or call the Five Star Products, Inc. Engineering and Technical Service Center at (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 Design-A-Spec™ for cold and hot weather grouting procedures or call the Five Star Products, Inc. Engineering and Technical Service Center at (800) 243-2206.
- Never exceed the maximum water content as stated on the bag.
- Construction practices dictate concrete foundation should achieve its design strength before grouting.

## 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 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 the Five Star Products, Inc. Engineering and Technical Service Center at (800) 243-2206.

SKU/PRODUCT CODE	DESCRIPTION	#UNITS/PALLET	WEIGHT
25000	Fluid Grout 100	56	55 lbs. (24.95 Kg)
25000N <sup>1</sup>	Fluid Grout 100 for Nuclear Safety Zone	56	55 lbs. (24.95 Kg)

<sup>1</sup>Compliant with NRC 10CFR50 Appendix B and ASME NQA-1 Quality Programs

**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](http://FiveStarProducts.com)

### Five Star Products, Inc. Corporate Headquarters

60 Parrott Drive  
Shelton, CT 06484 USA  
Tel: +1 203-336-7900 • Fax: +1 203-336-7913  
[FiveStarProducts.com](http://FiveStarProducts.com)



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