



FLUID GROUT 100

High Performance Precision Non-Shrink Fluid Grout
For Nuclear Safety Zone Applications

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 C1107/C1107M-20, and CRD-C 621-93 specifications for non-shrink grout over a wide temperature range, 40°F - 95°F (4°C - 35°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

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 feet (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.

PROPERTIES AT 70°F (21°C)

Early Height Change, ASTM C827	0.0 to 4.0%	
Hardened Height Change, ASTM C1090	0.0 to 0.3%	
Effective Bearing Area	95%	
Minimum Bond Strength, ASTM C882	2,000 psi (13.8 MPa)/28 days	
Freeze Thaw Resistance, ASTM C666A, 300 Cycles	> 95% RDM	
Minimum Compressive Strength, ASTM C942 (C109 Restrained)	Plastic Consistency ¹	Fluid Consistency ²
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	9,500 psi (65.5 MPa)	7,000 psi (48.3 MPa)
28 Days	11,750 psi (81.0 MPa)	8,500 psi (58.6 MPa)
Working Time at 70°F (21°C) May be affected by colder & warmer temperatures ³	30 minutes	

¹ 100% - 125% flow on flow table (plastic consistency), CRD-C 621 (ASTM C 230, 5 drops in 3 seconds) per ASTM C1437.

² 20 to 30 second flow (fluid consistency) by Corps of Engineers Flow Cone Method, CRD-C 611 per ASTM C939.

³ Refer to Five Star® Technical Bulletins 101 & 102: Cementitious Grouting in Cold Weather ; Cementitious Grouting in Hot Weather

Unless otherwise stated, 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

Mixing Ratio	4½ to 5½ qts (4.2 - 5.2 L) potable water per 55 lb. bag 5½ qts (5.2 L) for fluid consistency	Minimum Plate Clearance	½ in (12 mm)
Maximum In-Service Temperature	400°F (204°C)	Placement Depth	½ in - 6 in (12 mm - 150 mm) > 6 in, refer to TB105

PLACEMENT GUIDELINES

For optimum performance, install at temperatures between 40°F and 95°F (4°C and 35°C). Maintain grout and substrate above 40°F (4°C) until grout reaches 1,000 psi (6.9 MPa) compressive strength. Refer to Five Star® Technical Bulletins (TB) 101 and 102 *Cementitious Cold and Hot Weather Grouting* for extreme weather conditions.

- SURFACE PREPARATION:** Construction practices dictate a concrete foundation should achieve its design strength before grouting. All surfaces in contact with Five Star® Fluid Grout 100 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. A minimum ¼ inch (6 mm) peak to valley surface profile is recommended. Presoak concrete surfaces with potable water for a minimum of 8 hours (optimum 24 hours), continuously and consistently, via wet rags, wet burlap, ponding, or similar method to obtain a Saturated Surface Dry (SSD) condition. Any existing cracks shall be brought to the project engineer's attention prior to grout installation. Refer to Five Star® TB103 *Cementitious Grout Concrete Surface Preparation* and TB419 *Steel Baseplate Considerations* for further details.
- 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 the remaining sides shall be 1 to 2 inches (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. Refer to Five Star® TB410 *Grout Formwork* for further details.
- MIXING:** Use of a mortar mixer (stationary barrel with moving blades) is required to completely mix the grout. A portable mixer and paddle are acceptable for single bag mixes. Start with approximately 5 quarts (4.7 L) potable water per 55 lb. bag. Add Five Star® Fluid Grout 100 and mix for approximately 3 minutes to a uniform consistency. To achieve desired flow, add additional potable water and mix for an additional 2 minutes. If a fluid consistency is required, typically around 5½ quarts (5.2 L) water (total) are necessary. Do not exceed the maximum recommended amount of potable mixing water as directed. Do not allow the grout to segregate. For pours over 6 inches (150 mm) refer to Five Star® TB105 *Cementitious Grout Aggregate Extension* for further guidelines. Refer to Five Star® TB108 *Cementitious Grout Mixing* for further details. For bulk mixing applications, contact Five Star Products.
- PLACEMENT:** Five Star® Fluid Grout 100 may be poured or pumped into place. Placement should always be across the shortest distance. A headbox is recommended for pouring applications. Refer to Five Star® TB412 *Grout Placement* for further details. If field testing of the grout is required, refer to Five Star® TB109 *Cementitious Grouts Proper Compressive Strength Testing*.
- POST-PLACEMENT:** Five Star® Fluid Grout 100 shall be wet cured with potable water for a minimum of 24 hours. After initial 24-hour wet cure, grout shall be coated with an approved curing compound. If a 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 grout to freeze until it reaches 1,000 psi (6.9 MPa) compressive strength. In-service operation may begin immediately after the required grout compressive strength has been reached. Refer to Five Star® TB110 *Cementitious Grout Curing* and Five Star® TB413 *Grout Finishing* for further details.
- CLEAN-UP:** All tools and equipment may be cleaned with soap and water before the material hardens.

For additional Five Star® Technical Bulletins, visit FiveStarProducts.com. For further questions, or if additional information is required, contact your local Five Star® Technical Sales Representative at 1-800-243-2206.

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.**

SKU/PRODUCT CODE	DESCRIPTION	#UNITS/PALLET	UNIT SIZE
25000N ³	Five Star® Fluid Grout 100 for Nuclear Safety Zone	56	55 lb. (25 kg) bag

³Compliant with NRC 10CFR50 Appendix B and ASME NQA-1 Quality Programs

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Specifications Subject to Change.

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

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