



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 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

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.

TYPICAL PROPERTIES AT 70°F (21°C)

Early Height Change , ASTM C 827	0.0 to 4.0%	
Hardened Height Change , ASTM C 1090	0.0 to 0.3%	
Effective Bearing Area	95%	
Bond Strength , ASTM C 882	2,000 psi (13.8 MPa)/28 days	
Freeze Thaw Resistance , ASTM C 666A, 300 Cycles	> 95% RDM	
Compressive Strength , ASTM C 942 (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	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)
Working Time at 70°F (21°C)	30 minutes	

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

² 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

- 1. SURFACE PREPARATION:** All surfaces in contact with Five Star® Fluid Grout 100 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 8-10 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® 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 4.5 quarts potable water per 55 lb. bag. Mix for approximately two minutes. Add an additional 0.5 to 1.0 quarts of water and continue mixing for three minutes. If a fluid consistency is required, typically around 5 ½ quarts water (total) will allow for a fluid consistency. 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.
- 4. 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 Five Star Products' Technical Bulletin "Cement Grout Aggregate Extension" for guidelines.
- 5. 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. For more detailed placement procedures, go to FiveStarProducts.com and select Design-A-Spec™ in product downloads.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to *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 at 1-800-243-2206.
- Never exceed the maximum water content as stated on the bag.
- Construction practices dictate concrete foundation should achieve its design strength before grouting.
- Cement Based grout should attain a minimum compressive strength of 1,000 psi 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.

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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