



FIVE STAR

CEMENTITIOUS UNDERWATER GROUT

Pumpable Underwater Cementitious Grout

PRODUCT DESCRIPTION

Five Star® Cementitious Underwater Grout is an underwater pump grade, cement-based, non-shrink grout for pile restoration and similar applications. When tested in accordance with ASTM C 827, Five Star® Cementitious Underwater Grout exhibits positive expansion. Five Star® Cementitious Underwater Grout meets the performance requirements of ASTM C 1107 and CRD-C 621 specifications for non-shrink grout.

ADVANTAGES

- Placement via tremie method
- Salt and seawater resistant
- Pumpable
- Non-shrink from time of placement
- Locally manufactured under strict quality control standards

USES

- Pile repair and restoration
- Grouting underwater

PACKAGING AND YIELD

Five Star® Cementitious Underwater Grout is packaged in heavy-duty polyethylene lined bags and is available in 50 lbs (22.7 kg) units yielding approximately 0.42 cubic feet (11.9 liters) at maximum water.

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)	
Compressive Strength, ASTM C 109	
1 Day	2500 psi (17.3 MPa)
7 Days	6000 psi (41.4 MPa)
28 Days	7000 psi (48.3 MPa)
Bond Strength, ASTM C 882	
28 Days	2000 psi (13.8 MPa)
Early Height Change, ASTM C 827	
	0.0 to 4.0%
Hardened Height Change, ASTM C 1090	
	0.0% to 0.3%
Working Time at 70°F (21°C)	
	30 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 PREPERATION:** All surfaces to be in contact with Five Star® Cementitious Underwater Grout shall be free of marine growth, oil, grease, laitance, and other contaminants. Concrete must be clean, sound, and roughened to ensure a good bond. For applications where surfaces are not underwater, presoak surfaces with clean water for 8 to 24 hours prior to application.
2. **MIXING:** Mix Five Star® Cementitious Underwater Grout 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, condition grout to between 60°F and 80°F (15°C and 27°C). Do not exceed maximum recommended amount of mixing water as stated on the package or add an amount that will cause segregation. Do not re-temper mix by adding additional water. 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. For large volume placements, Five Star® Cementitious Underwater Grout may be extended with course aggregate meeting ASTM C 33.
3. **PLACEMENT PROCEDURES:** Five Star® Cementitious Underwater Grout may dry packed, poured or pumped into place. For placement thicknesses of less than one inch (25 mm), or greater than six inches (150 mm), call the Five Star Engineering and Technical Service Center at (800) 243-2206.
4. **POST PLACEMENT PROCEDURES:** Five Star® Cementitious Underwater Grout shall be kept continuously wet for three days in tidal zone areas or areas not under water.

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 Engineering and Technical Service Center at (800) 243-2206.

CONSIDERATIONS:

- If temperatures of equipment and surfaces are not between 40°F and 90°F (4°C and 32°C) at time of placement, call the Five Star Engineering and Technical Service Center at (800) 243-2206.
- 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.

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 Five Star's Engineering and Technical Service Center at (800) 243-2206.

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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