CEMENTITIOUS UNDERWATER HIGH-STRENGTH GROUT

Cementitious Pile Jacket Grout

PRODUCT DESCRIPTION

Five Star® Cementitious Underwater High-Strength Grout is an underwater pump grade, cement-based, non-shrink grout for pile restoration and similar applications. When tested in accordance with ASTM C827, Five Star® Underwater High-Strength Grout exhibits positive expansion for shrink compensation. Five Star® Cementitious Underwater High-Strength Grout meets the performance requirements of ASTM C1107 and CRD-C 621 specifications for non-shrink grout.

ADVANTAGES

- Placement via tremie, pump or pour
- Salt and seawater resistant
- Non-ferrous, Non-corrosive
- Non-shrink from the time of placement
- Includes anti-washout additives to ensure cohesiveness underwater
- Contains migrating corrosion inhibitors for superior corrosion resistance

USES

- Pile repair, rehabilitation and restoration
- Grouting underwater structures and as a pile jacket fill material
- Grouting areas subject to freshwater, saltwater or brackish exposure
- Installation of anchors and dowels

PACKAGING AND YIELD

Five Star® Cementitious Underwater High-Strength Grout is packaged in heavy-duty polyethylene lined bags available in 50 lb. (22.7 kg) units yielding approximately 0.43 cubic feet (12.2 liters) at maximum water. Also available in 800 lb. (363 kg) bulk bags yielding approximately 6.88 cubic feet and 3,000 lb. (1,361 kg) bulk bags yielding approximately 25.8 cubic feet.

SHELF LIFE

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

TYPICAL PROPERTIES AT 70ºF (21°C)	
Compressive Strength, (ASTM C109)	
1 Day	3,500 psi (24.1 MPa)
7 Days	8,000 psi (55.2 MPa)
28 Days	8,500 psi (58.6 MPa)
Bond Strength, (ASTM C882)	
28 Days	2,000 psi (13.8 MPa)
Modulus of Elasticity, (ASTM C469) extended with 60% pea gravel	5,200 ksi (35.8 GPa) @ 28 Days
Early Height Change, (ASTM C827)	Positive Expansion
Working Time at 70°F (21°C) May be affected by colder & warmer temperatures[1]	60 minutes

[1] *Refer to Five Star® Technical Bulletin 101 & 102: Cementitious Grouting in Cold Weather ; 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 above may result. Test methods are modified where applicable.

APPLICATION INFORMATION

Mixing Ratio	4 to 4¼ qts. (3.7 - 4.0 L) potable water per 50 lb. (22.7 kg) bag	**Placement Depth**	1 in - 6 in (25 mm - 150 mm) > 6 in (150 mm), contact Five Star

PLACEMENT GUIDELINES

For optimum performance, install at temperatures between 40°F and 95°F (4°C and 35°C). For applications where surfaces are not underwater, 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 Bulletin (TB) 101 and 102 *Cementitious Cold and Hot Weather Grouting* for extreme weather conditions.

1. **SURFACE PREPARATION:** Construction practices dictate a concrete foundation should achieve its design strength before grouting. All surfaces in contact with Five Star® Cementitious Underwater High-Strength Grout shall be clean and free of marine growth, oil, grease, laitance, and other bond-inhibiting contaminants. To maximize bond, concrete surfaces should be prepared by acceptable means to coarse aggregate exposure. For applications where concrete surfaces are not underwater, presoak these 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.
2. **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 4 quarts (3.7 L) potable water per 50 lb. (22.7 kg) bag. Add Five Star® Cementitious Underwater High-Strength Grout and mix for approximately 2 – 3 minutes to a uniform consistency. To achieve desired flow, add additional potable water and mix for an additional 2 minutes. Do not exceed the maximum recommended amount of potable mixing water as directed. Do not allow the grout to segregate. For clearances 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.
3. **PLACEMENT:** Five Star® Cementitious Underwater High-Strength 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. Finish as necessary. 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*.
4. **POST PLACEMENT:** Five Star® Cementitious Underwater High-Strength Grout shall be kept continuously wet for three days in tidal zone areas or areas not under water.
5. **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
20755	Five Star® Cementitious Underwater High-Strength Grout	56	50 lb. (22.7 kg) bag
20760	Five Star® Cementitious Underwater High-Strength Grout Bulk Bag	1	3,000 lb. (1,361 kg) bulk bag
20765	Five Star® Cementitious Underwater High-Strength Grout Bulk Bag	2	800 lb. (363 kg) bulk bag

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