TECHNICAL DATA SHEET

SeaShield 510™ UW Grout

Non-Shrink Underwater Cementitious Grout

Description

SeaShield 510 UW Grout is a high-strength, flowable, water-displacing, non-metallic, non-segregating, non-shrink cementitious grout that contains integral corrosion inhibitors. It is formulated with polymers and a special anti-washout admixture for underwater, above-water, or tidal-zone grouting applications.

Uses

Used for above water or underwater water grouting as a pile jacket filler material, bridge columns, home piling repairs, timber piles, concrete piles, and dam repairs where a “washout” resistant free-flowing pumpable non-shrink, high strength grout is required.

Features

- Specially formulated to achieve a flowable and pumpable grout consistency to ensure an ease of application
- Thixotropic consistency for “wash-out” resistant underwater repairs (displaces water)
- Non-Shrink
- Contains integral corrosion inhibitors
- Excellent adhesion to concrete
- Contains no chlorides, achieving high early and ultimate strength for fast repair and turnaround
- Positive expansion to ensure a maximum adhesion and durability
- Salt and seawater resistant
- For larger annular spaces, 510 UW Grout be extended with clean, rounded well graded aggregate from 3/8" to 1/2"
- Can be placed via pump, pour or tremie
- Meets the performance standards for ASTM C1107 and the Corps of Engineers CRD - C 621

Surface Prep

Surface preparation is very important and will extend the life of the repair. If section loss exceeds 25% a professional engineer should be consulted. Surface preparation should include the following:

- Surface must be at least 40°F (4°C) prior to application
- Surface must be sound and free of loose rust, marine growth, and any loose coatings
- Remove all oils, greases, dirt, and wax solutions from surface

Steel Surfaces: The recommended method is to prepare the surface by abrasive blasting per SSPC-SP6/NACE 3 Commercial Blast. However, high-pressure water blasting is acceptable and shall be done at a minimum of 3,500 psi (24 MPa). Scraping and other manual means of surface preparation should be avoided since they tend to polish the surface.

Concrete: Concrete should be a minimum of 28 days old and fully cured prior to application. Prepare the surface by abrasive blasting per SSPC-SP13/NACE 6, ICRI Guideline 310.2R CSP3.5. However, high-pressure water blasting is acceptable and shall be done at a minimum of 3,500 psi (24 MPa). Scraping and other manual means of surface preparation should be avoided since they tend to polish the surface.

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Wood: Prepare surfaces by high-pressure water blasting and shall be done at a minimum of 3,500 psi (24 MPa).

Mixing

To achieve optimal performance, condition the 510 UW Grout to 70°F prior to mixing. The quantity of water required to achieve a fluid consistency must be accurately measured for each mix. Start with 7.5 pints (3.54 L) and add additional water to bring the consistency to a fluid yet cohesive mix. Do NOT exceed 8 pints (3.8 L) of water. A mechanically powered grout mixer must be used. Ensure that the number of workers and machine capacity is adequate to allow grouting process to be carried out as a continuous operation. Place the specified amount of water in the mixer and slowly add the 510 UW Grout, while mixing continuously. Once all the contents are added, mix continuously for a minimum of 3 minutes until a smooth, uniform mix is obtained. Do NOT re-temper, add cement, sand, or mixtures. **Do NOT mix more than can be used in twenty minutes. Do NOT mix partial bags. Do NOT over water, this can cause bleeding or separation.**

Application

General Application:

- Fiber forms shall be sealed tight to prevent leakage during the installation process.
- Place the grout within 20 minutes of mixing to gain full benefit of the expansion process.
- Continuous grout flow is required, and the grout should be poured or pumped through a flexible tube, minimum diameter 1/2" (12.7 mm) to the lowest point in the form.
- At the start of the operation the grout flow shall be restricted to avoid any water entrapment. The bottom of the tube may be raised as necessary to reduce any back pressure but should not be raised above the level of the grout.
- A 6" (150 mm) minimum depth is suggested below the grout surface to optimize performance.
- Curing will not be required in intermittent or totally submerged conditions. However, when cast above water, cover immediately with clean wet rags, and keep moist until final set.
- All submerged portions should be inspected by a certified diver during the application of the 510 UW Grout to check for leaks and proper placement.
- DO NOT place at temperatures below 35°F (1.6°C) or if the temperature is expected to fall below 35°F (1.6°C) in the next twenty-four-hour period.

Application Thickness:

- Depending on the fiberglass jacket dimensions, the 510 UW Grout can be placed from the bottom of the form or plug to the top of the pile jacket in one continuous pour.
- An annular space up to 4” may be filled with 510 UW Grout in one pour when placed above water.
- An annular space up to 7” may be filled with 510 UW Grout in one pour when placed underwater.

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- For annular spaces up to 10" (250 mm) above water and 20" (500 mm) underwater, it is recommended to fill out SeaShield 510 UW Grout using a clean, rounded and well graded aggregate in the size range 3/8" (9.5 mm) to 1/2" (12.7 mm).
- The quantity of aggregate added should not exceed 1/2-part aggregate to 1 part 510 UW Grout by weight.
  For such mixes, a concrete mixer must be used.

- Unrestrained surface areas should be kept to a minimum.

- Excessively large volumes should require a thermal analysis to determine any limitations on pour size.

Formed Applications: For formed applications above water, surfaces shall be soaked with water prior to application of SeaShield 510 UW Grout. Remove standing water before to installation.

Pumping Application:

- Install pumping ports at 90 degrees from tongue-and-groove closure, alternating sides approximately every 5 ft. Place the bottom port approximately 1 ft. from the end of the jacket. Start pumping from the lowest port and move upward to the next port until you reach the final port.

For Tremie Applications:

- The pumping hose must reach the bottom of the form. Start pumping from the bottom of the form and fill to the desired level. This will allow water displacement to take place. The tremie hose may need to be retracted as the form fills to maintain a constant flow.

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Product Data / Technical Data

Compressive Strength (ASTM C-109)		
(mixed with 8 pints / 3.8 L water)		
1 Day	3500 psi (24 MPa)	
3 Days	5500 psi (37.9 MPa)	
7 Days	7500 psi (51.7 MPa)	
28 Days	9000 psi (62 MPa)	
Set Time (ASTM C-266)	**Initial**	**Final**
70°F	2 hours	4 hours
40°F	10 hours	12 hours
Flexural Strength (ASTM C-190)		
28 Days	1410 psi (9.7 MPa)	
Tensile Strength (ASTM C-190)		
28 Days	600 psi (4 MPa)	
Coefficient of Thermal Expansion (ASTM C-531)	4.65 x 10-6 in/in/°F (8.37 x 10-6 mm/mm/°C)	
Bond Strength (ASTM C-882)		
7 Days	1500 - 2000 psi (10 - 13.8 MPa)	

STORAGE: SeaShield 510 UW Grout should be stored in a cool, dry interior area. At no time should material be exposed to high moisture, rain, or snow conditions. When stored in the original packaging and in proper storage conditions, the shelf life is one year from the date of manufacture.

CLEANING: If the product spills on the ground, sweep or vacuum the material into a preassigned container. To clean equipment or form surfaces, you may use soapy water and/or a non-toxic cleaning agent such as Simple Green.

HEALTH & SAFETY: Wear protective clothing and ensure adequate ventilation. Avoid contact with skin and eyes. See Safety data sheet for further information.

PACKAGING: 50 lb. (22.7 kg) bag and 3,000 lb. (1,361 kg) supersack.

YIELD: Yield per 50 lb. bag mixed with 1 gallon (8 pints) of water is .45 cubic feet (0.01 m³). Yield per 3,000 lb. supersack mixed with 60 gallons (480 pints) of water is 27 cubic feet (0.76m³)

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