

## **CERTI-VEX<sup>®</sup> GROUT UW**

### **CEMENTITIOUS UNDERWATER GROUT**

**NON-SHRINK • NO WASH OUT • ASTM C 1107 • NON-METALLIC**

#### **DESCRIPTION**

**CERTI-VEX GROUT UW** is a ready to use, non shrink, non metallic cementitious grout engineered for underwater applications. It contains no chlorides or gypsum. When properly mixed the grout exhibits exceptional strength and excellent resistance to wash out.

The material's unique formula of high quality Portland Cement, finely graded aggregates, shrinkage compensating admixtures and expansive cementitious binder allow it to maintain its strengths at various consistencies.

The product contains a special migrating corrosion inhibitor protecting reinforced steel and other metals embedded in concrete from corrosion.

#### **RECOMMENDED FOR**

- Bridge columns
- Concrete piles
- Concrete dams
- Repairs to underwater or tidal zone concrete structures

#### **BENEFITS**

- Salt water resistant
- Pumpable and flowable
- Effectively displaces water
- Protects against the harmful effects of anodic and cathodic corrosion
- Excellent flexural and compressive strengths
- Resists washout

#### **SURFACE PREPARATION**

- All surfaces must be clean, sound and free of surface contaminants.
- All loose and unstable material must be removed.
- Permanently immersed substrates should be prepared by sand blasting or high pressure water jet.

#### **PLACEMENT**

- Certi-Vex Grout UW may be poured or pumped (tremie method) into place. In areas not completely under water, such as tidal zones, keep moist for at least 24 hours or apply a Vexcon Chemical clear curing compound. Contact Vexcon Chemicals for product recommendation.
- Formwork/jackets used must be leak proof to allow grout to be free flowing. Treat all form work with a suitable form release agent manufactured by Vexcon Chemicals if formwork is to be removed. Contact Vexcon Chemicals for product recommendation.
- Mix Certi-Vex Grout UW with clean water per package instructions.
- For uniform mix, use paddle or drum type mechanical mortar mixers. Add powder to the water and mix.
- Do not mix for more than 5 minutes. Place grout immediately after mixing.
- Do not mix more grout than can be placed within the allotted work time.
- Certi-Vex Grout UW can be poured or pumped through a flexible tube (minimum diameter of 2" or 50mm) to the lowest section of the form. The grout flow must be restricted during the pour so that water is not entrapped. The flexible tube can be raised to reduce back pressure; however, it should never be raised above the surface level of the grout.
- The temperature of the grout, the atmosphere and the configuration of the area to be grouted, can each or in combination affect the time during which grout can be successfully worked. To be safe, complete grouting within 20 minutes of the addition of water.

#### **PLACEMENT THICKNESS**

##### **For underwater placement:**

- Certi-Vex Grout UW can be extended with 25#, 3/8" pea gravel per 50# bag.
- Grout may be placed continuously when the annular spaces are between 1" and 6".
- Above water sections should be evaluated with ACI procedures. See "**Special Note**" section.

**SPECIAL NOTES**

- Temperatures between 50 and 80° F (10 and 27° C) have no effect on the grouting procedure. When temperatures fall below 50° F (10° C) around the area to be grouted, the mixing water and the dry grout should be warmed to not more than 80° F (27° C). Use ACI-306, "Standard Practice for Cold Weather Concreting" as a guide. When temperatures greater than 80° F (27° C) prevail, the grout and mixing water should be cooled as per ACI-305, "Standard Practice for Hot Weather Concreting".
- Do not add accelerators to Certi-Vex Grout UW, without consulting with Vexcon Chemicals.
- Use only in confined areas. Not designed for overlays or surface patching.
- Grouted surfaces that are exposed to the atmosphere should be treated with a clear curing compound, such as **Certi-Vex AC 1315** to prevent rapid drying and shrinkage cracking.
- Proper application of Vexcon material is the responsibility of the installer or user. Telephone consultation and/or field visits by Vexcon personnel are for the sole purpose of making technical recommendations only, and not for providing quality control or supervision on location.

**CERTI-VEX GROUT UW: PERFORMANCE**

<b>Set Time (ASTM C266)</b>			
	<b>Initial</b>	<b>Final</b>	
Dry Pack	15 min	3 hrs.	
Plastic	3 hrs	5hrs.	
Flowable	3.5hrs.	7hrs.	
Fluid	4hrs.	7.5hrs.	
<b>Compressive Strength (ASTM C109)</b>			
	<b>1 Day</b>	<b>7 Days</b>	<b>28 Days</b>
Dry Pack	3,500 psi	7,000 psi	10,000 psi
Plastic	3,100 psi	5,400 psi	7,400 psi
Flowable	2,900 psi	5,000 psi	6,900 psi
Fluid	2,800 psi	4,900 psi	6,800 psi
<b>Tensile Splitting Strength (ASTM C496)</b>			
500 - 600 psi @ 28 days			
<b>Flexural Splitting Strength (ASTM C293)</b>			
1,000– 1,400 psi @ 28 days			
<b>Bond Strength (ASTM C882)</b>			
1,800 – 2,000 psi @ 28 days			
<b>Expansion % @ 28 Days ( ASTM C1090/CRD C621)</b>			
Dry Pack	+.06%		
Plastic	+.06%		
Flowable	+.055%		
Fluid	+.03%		

**PACKAGING**

Certi-Vex Grout UW is available in 50-pound bags. Contact Vexcon directly to discuss your customized packaging requirements.

**WATER REQUIREMENTS**

**Consistency**                      **Amount per 50 lb (22.7 kg) bag**

Dry Pack	3.5-4.0 quarts clean potable water
Plastic	4.75 quarts clean potable water
Flowable	5.0 quarts clean potable water
Fluid	5.5 quarts clean potable water

In applications where the grout thickness is to be greater than 3” up to 50% clean, washed and dried 3/8” (9.5mm) pea gravel, based on the weight of the grout may be added. (25 lbs. of pea gravel to 50 lbs of Certi-Vex Grout UW)

**YIELD**

- One 50 lb. bag yields approximately 0.44 ft<sup>3</sup> at 4.0 quarts of water.
- One 50 lb bag extended with 25 lbs. of washed pea gravel (3/8”) yields approximately 0.60ft<sup>3</sup> at 4.5 quarts of water.

**SPECIFICATIONS**

Certi-Vex Grout UW meets or exceeds the following specifications:

- CRD C 621 Specifications for Non-Shrink Grout..
- ASTM C 109 Standard Tests for Compressive Strength of Hydraulic Cement Mortars.
- ASTM C-1090 – Standard Test Method for Measuring Changed in Height of Cylindrical Specimens of Hydraulic-Cement Grout.
- ASTM C-266 – Standard Test Method for Time of Setting Hydraulic-Cement Paste by Gillmore Needles
- ASTM C-293 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)
- ASTM C-496 – Standard Test Method For Splitting Tensile Strength of Cylindrical Concrete Specimens
- ASTM C-882 – Standard Test Method for Bond Strength
- State Department of Transportation approved.
- CSI 03 37 26, 03 60 00

**HEALTH AND SAFETY**

This product is a gray powdered solid. Continued inhalation of dust over a period of years without proper respirator and ventilation controls will cause silicosis and lung cancer. Used only with safety glasses, neoprene gloves and protective clothing recommended. Before using product, it is advisable to obtain a copy of the MSDS PR220 from your distributor or by contacting Vexcon Chemicals.

**CONTACT US @**

Additional product information, technical assistance and customer services are available by contacting Vexcon Chemicals directly or our distributors.

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**WARRANTY**

LIMITED WARRANTY: Vexcon warrants for a period of one (1) year from the date of manufacture that the goods supplied hereunder shall be of its standard quality and free of defects, and conforms to (a) Vexcon's published specifications in force on the date of acceptance by Vexcon of the order and (b) the sample which has been made available for testing by buyer prior to sale. Any claim under this warranty must be made in writing to Vexcon Chemicals within sixty (60) days after such non-conformity is first discovered. As the EXCLUSIVE REMEDY for any breach of this Limited Warranty, Vexcon at its option shall replace nonconforming goods or refund the purchase price. Since methods of use and application are beyond Vexcon's control, this Limited Warranty IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THOSE CONCERNING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS LIMITED WARRANTY IS ALSO IN LIEU OF ANY OTHER POSSIBLE LIABILITIES OF VEXCON, WHETHER ALLEGED TO ARISE BY AGREEMENT OR BY OPERATION OF LAW, RESPECTING THE SALE, APPLICATION, USE OR FUNCTION OF VEXCON'S PRODUCTS, INCLUDING BUT NOT LIMITED TO CLAIMS OF NEGLIGENCE, GROSS NEGLIGENCE, MISUSE, STORAGE DAMAGE, MISAPPLICATION, ACCIDENT, STRICT LIABILITY OR ANY OTHER TORT. No person is authorized by Vexcon to assume for it any other liability of any kind in connection with the sale or use of products manufactured and sold by it, and there are no oral agreements or warranties collateral to or affecting any sale or use. All of the foregoing arises under the substantive law of Pennsylvania without regard to principles of conflicts of laws.

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