

## Non-shrink Cement Based Grout For Underwater Applications

**Guardian UWG** is a non shrink cementitious grout designed for grouting applications where it is necessary to eliminate shrinkage whilst completely filling voids underwater.

### USES & ADVANTAGES

**Guardian UWG** is designed for use underwater or in tidal zones in areas such as bridge & quay columns, concrete piling, slipways, dams & other underwater structures.

**Advantages include:-**

- Expansion system eliminates shrinkage in plastic state.
- Non Metallic.
- Only requires addition of water.
- Good early and ultimate strength.
- Low permeability. High durability.
- Excellent flowability.
- Chloride free.
- No significant wash out.

### PROPERTIES

<b>Appearance:</b>	Grey powder
<b>Density:</b>	Approx. 2,150 kg./m <sup>3</sup>
<b>Bond Strength to Concrete:</b>	> 2.5 N/mm <sup>2</sup> at 28 days (Concrete failure) ASTM D4541 Submerged Concrete
<b>Drying Shrinkage:</b>	< 500 micro strain at 28 days 23°C C/RH 50% ASTM C490
<b>Expansion:</b>	0-3% ASTM C827
<b>Water by weight of grout:</b>	21-22 % (4.2-4.4 Ltr/20 kg bag)
<b>Yield:</b>	11.35 litres/20 kg bag when mixed with 4.4 ltr of water.
<b>Grouting thickness:</b>	min 10 mm. max 150 mm.
<b>Setting Time (water content -22%)</b>	
Initial:	8 hrs
Final:	9 hrs

### TYPICAL CHARACTERISTICS AT 30°C UNDER LABORATORY CONDITIONS

Water Content (%)	Average Compressive Strengths (N/mm <sup>2</sup> ) ASTM C109 / 109 M		
	1 day	7 days	28 days
21-22 %	20-17	45-42	50-47

### SURFACE PREPARATION

Surfaces should be clean sound and free from oil, grease, laitance and loose particles. Metal surfaces should also be clean and free of rust, oil, grease and contaminants.

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### FORM WORK

The formwork should be watertight. Therefore a joint sealant should be used to close all points where forms meet and also around the bottom and top of formwork.

### MIXING

**Guardian UWG** should be mixed using a suitable mixer. For flowable consistency use a hand drill and paddle with a speed of <400 R.P.M. For large works use a high shear vane grout mixer. Drum mixers are not recommended. The entire contents of the bag should be added to the pre-measured water while mixing. **DO NOT** add more than the maximum water content without consulting **Guardian**.

### APPLICATION

Place the grout within 30 minutes of mixing. Ensure there is a continuous flow to prevent trapping air or water. Pour or pump through a flexible pipe at least 50 mm. wide placed at the lowest point of the formwork. Raise the tube gradually as the grout rises. The grout may be poured below water up to 15 cm. thick. For thicker sections clean, saturated aggregates may be added (consult Guardian). The grout wherever possible should be restrained.

### CURING

Curing is not required if below water. If in tidal zone keep moist.

### PACKAGING

20 kg. 4 Ply. plastic lined bags.

### STORAGE CONDITIONS & SHELF LIFE

Store in dry shaded conditions. The shelf life is at least 12 months if kept dry in original packaging. High temperatures and humidity may reduce shelf life

### HEALTH & SAFETY

**Guardian UWG** is alkaline avoid contact with skin & eyes. Gloves, goggles and dust mask should be worn. Remove from skin with soapy water. Splashes in the eyes should be washed out with copious amounts of clean water and medical attention sought. **Guardian UWG** is non-flammable.

### TECHNICAL SERVICE

The Guardian Coating Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

### QUALITY ASSURANCE

ISO 9001 : 2015 verified by BSI