



BluCem 511

HIGH STRENGTH NON SHRINK GROUT



BluCem 511 is a one component cement powder which requires only the addition of water to form a high strength cementitious grout.

BluCem 511 is a pumpable, non shrink product suitable for civil engineering applications. BluCem 511 incorporates specially graded aggregates and advanced cement additives to form a cementitious grout which is Class C dual shrinkage compensated, high strength, low permeability and suitable for 100 year design life applications.

Application Advantages

- Highly fluid and self compacting
- Long pump life
- Early age strength development

Lifecycle Advantages

- C Class
- Dual shrinkage control
- High strength
- Low permeability
- 100 year design life

About the Product

A high strength, fluid and shrinkage compensated grout. BluCem 511 has both early and long term shrinkage compensating additives. This allows grout to be placed in critical applications and ensures elimination of shrinkage cracking or settlement.

Application Solutions

- Concrete repair
- Structural repairs of beams
- Columns and slabs
- Floor repair and topping
- Grouting
- Pile grouting
- Precast grouting

Project Specification Clause

FLUID NON-SHRINK CONSTRUCTION GROUT - The high strength cementitious grout used for this project shall be a one component cement powder which requires only the addition of water to form a durable high strength product. It shall be a pre-blended product that has independent testing to validate the performance outlined in the technical data table on the following pages. BluCem 511 manufactured by Bluey Technologies or equivalent shall be accepted.

Project Examples

Airport construction, bridge repair, building repairs, dam construction and repair, jetty construction and repair, concrete structures, rail construction, rail repairs and shutdowns, retaining walls, road repairs, runway repairs and shutdowns, wharf repair and construction.





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Application Specification

MIXING

- 1.1 Measure and place 80% of the specified volume of potable water to the high shear mixing vessel. Start mixer and slowly add BluCem 511 powder. If powder addition is too fast then large lumps will form and final mix will be slow reaching uniform consistency. Following addition of all powder, mix for 1 - 2 minutes or until uniform consistency then add final 20% of potable water. More or less water may be added within the ratio limits specified on this data sheet. Do not mix more material than can be placed in 20 minutes.

PUMPING

- 2.1 Once the grout has been mixed you need an effective pumping method to deliver it to the area of application. Various models of batch mixers and continuous mixers are available for use, all with varying specifications. It is important to match your application's specifics with the capabilities of the mixer and pump. Bluey Technologies are able to recommend the right mixer for your project.
- 2.2 Prior to pumping grout, rinse the mixer and charge the pump hopper with sufficient water to flush and cool the pump and all grout lines thoroughly. Check to ensure that all lines and hoses are clear and unobstructed. Once grout is mixed, it is important to keep it agitated continuously prior to pumping.
- 2.3 Once the site is ready for grout placement, commence pumping. It is important to pump continuously and avoid the formation of cold joints.
- 2.4 Following completion, dispose of excess production material in consideration of the environment. Carefully wash out mixer tanks and agitators into the pump hopper and pump the resulting washout material through the grout hoses to a suitable disposal site. Drain any water out of the lines and hoses. Clean down the machinery and surrounding areas.

APPLICATION TEMPERATURES

- 3.1 The mix water's temperature should be kept as low as possible to prevent the grout from hydrating too rapidly.
- 3.2 As with the water temperature, the higher the air temperature the more quickly the grout hydrates and sets. Bluey Technologies specify mixing times and set times at an ambient temperature of 20°C. These times vary with temperature fluctuations, and adjustments will be required to compensate for this. Exposing the pumping hoses to the sun on a hot day accelerates the product's set time. In some cases it may be necessary to cool the material, the mix water, or even the hose itself during the process and pre-planning the storage of all materials to keep the temperature as low as possible.
- 3.3 High-shear mixing can add 1 to 2°C per minute of mixing. In order to minimise this effect, add all ingredients to the mixer as quickly as possible and minimise prolonged batch-mixing procedures.
- 3.4 It is estimated that every 10°C increase in temperature will halve the product set time. Likewise every 10°C reduction will double the set time. These set time variances may have detrimental consequences for the final set product and Bluey Technologies should be consulted where extreme temperatures are anticipated.

APPLICATION

- 4.1 BluCem 511 may be poured or pumped into place. Substrate surfaces must be free from oil, grease and weakened surfaces. Check formwork for leaks prior to mixing and application of grout. Do not exceed the maximum application thicknesses specified in the data sheet for any wet layer. When pouring BluCem 511, reduce exposed surface areas to ensure maximum confinement during expansion phase of initial set. Consult Bluey Technologies for further information on utilising the plastic shrinkage and settlement compensation system of this product. Consult Bluey Technologies for further information about aggregate addition for large volume pours.

CURING

- 5.1 It is recommended that the final surface finish layer is coated with curing compound or otherwise maintained wet for at least three days.



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Product Data

Please refer to Important Notice on following page

Packaging	25kg bags
Yield	12 - 13 litres per 25kg @ 3.2 - 3.4 litres water Trowellable 14 - 15 litres per 25kg @ 4.4 - 4.5 litres water Flowable
Working Temperature*	5°C - 40°C
Water Powder Ratio	0.175 - 0.185
Unstrained Expansion	1-3% @ 3 hours

TESTED CHARACTERISTIC	STANDARD	RESULT
Compressive Strength	ASTM C942	Flowable 18N/mm ² @ 1 day 30N/mm ² @ 3 days 35N/mm ² @ 7 days 75N/mm ² @ 28 days Plastic 40N/mm ² @ 1 day 50N/mm ² @ 3 days 60N/mm ² @ 7 days 75N/mm ² @ 28 days
Flow Consistency	ASTM C959	30 seconds
Setting Time	ASTM C953	Flowable Initial set - >3 hours Final set - <6 hours Plastic Initial set - >1 hour Final set - <6 hours

*Note: For ambient temperatures below 10°C, the formwork should be kept in place for at least 36 hours.



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