

BluCem HS60

FLUID NON-SHRINK CONSTRUCTION GROUT

BluCem HS60 is a one component cement powder which requires only the addition of water to form a high strength cementitious grout.

BluCem HS60 is a pumpable, non shrink product suitable for civil engineering applications. BluCem HS60 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

BluCem HS60 is a highly fluid, volumetrically stable, Class C grout which 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. BluCem HS60 has been formulated to ensure that expansion is staged to compensate shrinkage both in the plastic and drying states.

Application Solutions

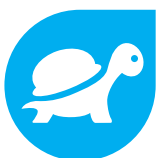
- Concrete repair
- Structural repairs of beams
- Columns and slabs
- Floor repair and topping
- Grouting
- Pile grouting
- Precast grouting

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 HS60 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

CONCRETE PREPARATION

- 1.1 All defective host substrate must be removed prior to application. Defective material includes cracked or structurally weakened surfaces and also chloride contaminated and carbonated concrete. A concrete corrosion expert must be consulted for critical projects or structural applications.
- 1.2 Host concrete must be roughened and aggregate exposed to ensure good bond. Removal of laitance is important to ensuring good bond. Shot-blasting, scarification, mechanical chipping or high pressure water blasting may be used to achieve a recommended minimum CSP3 surface finish. It is important to select a preparation method which is considerate to the application environment, host concrete, and surface finish requirements. The correct balance between roughening the surface and not causing further micro-cracking and damage should be trialed and assessed using adhesion test methods following initial preparation trials.
- 1.3 All surfaces must be free of dust, oils and surface contaminants. This may require steam cleaning or high pressure water blasting.
- 1.4 Priming using BluCem API0 is recommended. Priming by saturation of the surface using potable water prior to application is also acceptable. Priming with epoxy primers or other products which prevent vapour transmission is not recommended.

MIXING

- 2.1 Measure and place 80% of the specified volume of potable water to the high shear mixing vessel. Start mixer and slowly add BluCem HS60 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

- 3.1 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.
- 3.2 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.
- 3.3 Once the site is ready for grout placement, commence pumping. It is important to pump continuously and avoid the formation of cold joints.
- 3.4 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

- 4.1 The mix water's temperature should be kept as low as possible to prevent the grout from hydrating too rapidly.
- 4.2 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.
- 4.3 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.
- 4.4 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

- 5.1 BluCem HS60 may be poured or pumped into place. Do not exceed the maximum application thicknesses specified in the data sheet for any wet layer. When pouring BluCem HS60, reduce exposed surface areas to ensure maximum confinement during expansion phase of initial set. Consult Bluey Technologies for further information about aggregate addition for large volume pours.

CURING

- 6.1 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	20kg, 1000kg, 1200kg bags
Water Addition	1.8 - 3.6 litres per 20kg bag
Yield	9.3 litres per 20kg @ 10% water 10.1 litres per 20kg @ 14% water
Application Thickness	Refer to Bluey Technologies for advice and approval on pour thicknesses with dimensions exceeding 100mm
Pump Life	90 minutes @ 20°C
Maximum Particle Size	0.6mm

TESTED CHARACTERISTIC	STANDARD	RESULT
Portland Cement	AS3972	Complies
Aggregates	AS2758.0	Complies
Compressive Strength	AS1478.2 Appendix A	1.8 - 2.0 litres water per 20kg Dry pack 40MPa @ 24 hours 70MPa @ 7 days 90MPa @ 28 days 2.1 - 2.3 litres water per 20kg Trowellable 30MPa @ 24 hours 60MPa @ 7 days 75MPa @ 28 days 2.4 - 3.2 litres water per 20kg Pourable 20MPa @ 24 hours 50MPa @ 7 days 65MPa @ 28 days 3.3 - 3.6 litres water per 20kg Flowable 15MPa @ 24 hours 30MPa @ 7 days 50MPa @ 28 days
Early Volume Change	AS1478.2 Appendix E	1.13%
Change in Height	ASTM C1090	Positive through to 28 days
Expansion	ASTM C940	2.5%
Bleeding	ASTM C940	<0.02%
Electrical Resistivity	Taywood-Warner 4 Probe	9000ohm-cm @ 7 days 13000ohm-cm @ 28 days 15000ohm-cm @ 56 days
Setting Time	AS1012.18	Initial set - 240 minutes Final set - 310 minutes
Fresh Wet Density	AS1012.5	2240kg/m ³

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IMPORTANT NOTICE

This Technical Data Sheet is provided for general information and instruction only. Bluey does not warrant that the information it contains is accurate, reliable or complete. Bluey does not warrant that the product (or any related services) will achieve any of the characteristics set out herein in any particular application in the field, nor that it will be suitable for any specific use or purpose. The properties and characteristics set out herein represent typical testing results under laboratory conditions only. Results of actual product implementation may vary. Site-specific and project-specific criteria will affect product performance, including without limitation: surfaces, materials or products used with the product or to which the product is applied; and weather, climatic or seasonal conditions. The user must take into account all such criteria relevant to the project concerned when considering any desired results, including by undertaking trial mixing and application under site conditions. Not all product parameters are batch tested as part of the manufacturing quality control process, and performance may vary between batches.

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