



BluCem HS200

CEMENT GROUT FOR PT CABLES & GROUND ANCHORS

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WHAT IS IT?

Blu**Cem** HS200 represents leading edge technology in cement grout for filling of ducts around post tensioned cables or encapsulation of ground anchors to ensure long term durability of the cables and anchors while maximising structural load transfer



BluCem HS200

PRODUCT INFORMATION

Blu**Cem** HS200 is a one component powder blend containing GP and other additives which requires only the addition of water to form a high fluidity, low bleed and high compressive strength structural grout.

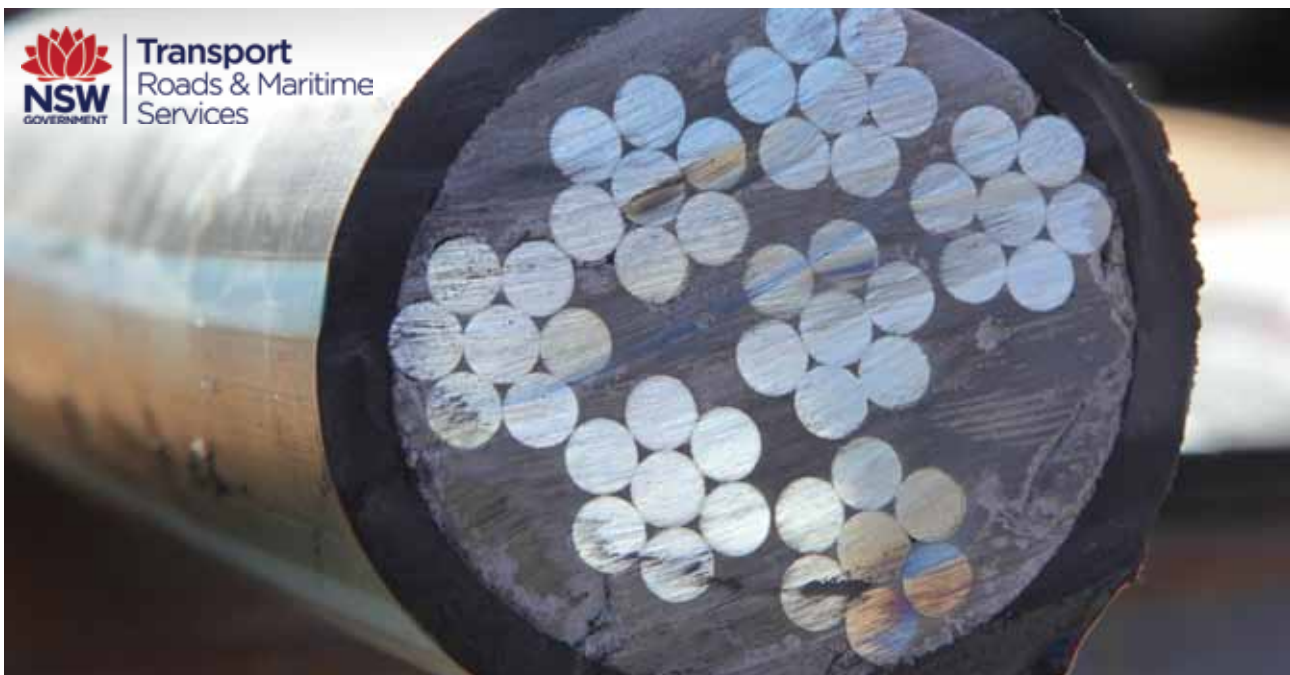
WHERE DO WE USE BLUCEM HS200?

Blu**Cem** HS200 has been specifically designed and tested to meet the onerous specification requirements demanded by road authorities for use in grouting of post tensioned cables in bridges and other structures and for use in grouting of ground anchors and soil nails.

WHY BLUCEM HS200?

The product meets road authority specification requirements with regard to:

- Constant high fluidity for 45 minutes to ensure flow, penetration and encapsulation throughout the pumping and placement cycle
- Very low bleed for absolute engagement of cables and anchors for load transfer
- High early strength for early loading of cables and anchors
- High ultimate strength to provide a dense, low permeability grout for long term durability
- Limited volume change providing a stable grout matrix within the filled void.



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PRODUCT SUPPORT

RESEARCH, EXPERIENCE, PRODUCT, SUPPORT

BluCem HS200 is manufactured and supported by Minova International Ltd, a group of companies with 50 years of accumulated experience in providing products for the mining industry.

Minova's range of products includes resin capsules for rock bolting, high volume output grouts for strata support, ventilation control devices and specialised coatings including Tekflex.

Minova has over 1,200 employees worldwide, and 12 manufacturing sites in seven countries, with key facilities in the U.S, Germany, Poland, Australia and South Africa.

BACKED BY ORICA

Minova is part of the Orica Group (www.orica.com) which provides products and services to the mining, manufacturing and construction and consumer markets. Orica, with a market capitalisation of approximately AU\$7 billion, is one of the top 50 companies listed on the Australian Stock Exchange, and has over 13,000 employees in approximately 50 countries and services customers in 98 different countries around the world.





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PRODUCT APPLICATIONS

Examples of the use of BluCem HS200 include:

- Filling post tensioned cable duct
- Ground anchor grouting
- Soil Nail Grouting



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PRODUCT FEATURES & BENEFITS

KEY FEATURES

Supplied in prepackaged bags of 20kg, 1000kg or 1200 kg

Approved grout product for use in applications where specifications such as RTA B113 and R56 apply for tensioning and ground anchor works

Maintains high fluidity for 45 minutes

Offers fast strength gain

Has extremely low bleed

Is tolerant to use in higher ambient temperatures

Easily mixed with a Bluey fine aggregate to provide a bulk fill grout if required

KEY BENEFITS

Eliminates batching variation and quality issues associated with blending cement and additives on site

Provides contractual compliance on RTA projects and other similar high performance specifications

Allows long pot life for ease of pumping and placement of large volumes and eliminates the occurrence of air voids around cables and anchors

Allows early loading and a significant decrease in the construction cycle times when installing rock bolts and ground anchors

Ensures that the anchors have maximum contact with the surrounding strata and provides optimum load capacity

Can be batched in hot climates and achieve the same specification requirements with regard to fluidity and compressive strength without the need for water or powder cooling systems

Provides the contractor with versatility where one grout can perform two different functions



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PRODUCT DEVELOPMENT

Bluey recognised that there was a need in the industry for a high performance grout for post tensioning and ground anchor installations that did not have inherent complications when used on sites in variable weather conditions and additionally with the ability to consistently meet the performance requirements of road authority specifications.



PERFORMANCE AND ADAPTABILITY

BluCem HS200 grout was developed over a period of four years, culminating in RTA approval in 2011, following final testing and physical inspections in accordance with the methods and testing arrangements outlined in the specifications. Reported results and outcomes are available as a complete document for review by prospective users of the BluCem HS200 grout.

Inspections of cable ducts cut through after grout placement show that the BluCem HS200 has the necessary product characteristics that ensure complete filling of voids and encapsulation of the cables and the grout does not segregate or bleed when pumped into ducts under pressure.

Further testing of the grout at temperatures up to 38°C has validated that the grouts technical performance criteria remains unchanged at that grout temperature.

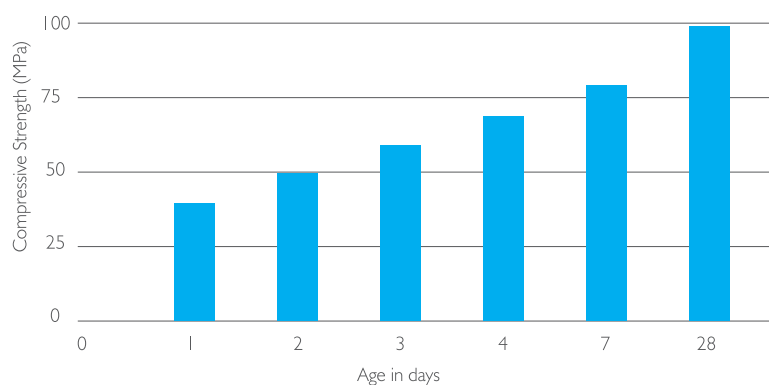
BluCem HS200

PRODUCT TESTING



COMPRESSIVE STRENGTH GAIN FOR BLUCEM HS200

Water to powder ratio of 0.3:1



OVERVIEW OF COMPREHENSIVE TESTING CARRIED OUT FOR THE ROAD TRAFFIC AUTHORITY.

A grout trial was organised by Bluey for the approval of the BluCem HS200, all testing was monitored by the RTA.

The aim of the trial was to demonstrate and verify that the BluCem HS200 performs and meets the criteria specified by the RTA. The inspection of the grouted tendon was to prove the quality of the grout and the efficiency of the injection. RTA officials witnessed both operations.

A report has been written in accordance with the latest RTA specification B113 (Edition3 / Revision5) and the "Requirement for RTA Approval of Grouting Systems", dated 12/08/09 detailing the methodology and the acceptance criteria.

AVAILABLE BY CONTACTING BLUEY



BluCem HS200

PRODUCT DATA



PRODUCT DATA

PACKAGING:	20kg or 1000kg bags
RATIO:	0.28 – 0.33 : 1 (Water : Powder ratio)
YIELD:	0.3 : 1 - 610 litres per 1000kg bag
MAXIMUM THICKNESS:	Ø 200mm ducts
PUMP LIFE:	1 - 2 hours @ 20°C
INITIAL SET TIMES:	4 hours
BLEED:	< 0.5%
SHRINKAGE:	<1%
BOND STRENGTH (7 DAYS):	0.5 - 1MPa (unprimed concrete surfaces) 0.8 -1.5MPa (primed concrete surfaces)
FRESH WET DENSITY:	1910kg/m ³
CURED DENSITY:	1920kg/m ³
SEDIMENTATION:	< 2% (density variation over 1.5m wick test)
MODULUS OF ELASTICITY:	3.86GPa
COMPRESSIVE STRENGTH (0.35 : 1):	20MPa @ 24 hours 65MPa @ 7 days 80MPa @ 28 days
CLEAN UP:	Clean tools and surfaces using water prior to curing
STORAGE:	Store in cool dry conditions Shelf life is 12 months

BluCem HS200

ONSITE INSTALLATION

ONSITE MIXING AND PLACEMENT

BluCem HS200 can also be mixed on site by using an additive formulation (BluCem HS200A) that is added as one part additive to 20 parts GP cement on site. While this option provides obvious cost benefits compared with using a complete blended BluCem HS200 powder, there are quality pitfalls associated with human error in batch counting of powder bags and water addition.

Accurate addition of water is critical to the performance of the product and this should always be controlled by using a calibrated water meter or other calibrated measuring vessels.

Potable water must always be used for batching specialist grout products such as BluCem HS200.

Bluey Technologies have recognised that batching of specialised grout products such as BluCem HS200 in 20 kg bag is labour intensive and the long batching and pumping cycles add significantly to project and can attract overhead costs.

In recent times, Bluey Technologies have carried out trials with BluCem HS200 from 1200kg bulk bags and with mixing in 2.0 to 5.0m³ concrete transit mixers.

If this mixing process is conducted in accordance with Bluey Technologies guidelines the batched grout and its performance meet or exceed road authority specification requirements. The ability to mix and pump several cubic metres of grout expediently,

offers considerable project savings associated with cycle time reductions.

Powder unloading is facilitated by the use of a powder dispenser comprised of bag breaker, silo and screw conveyor. Alternatively bulk bags can be supplied with bottom emptying spouts for unloading by personnel with access to the agitator filling cone by an approved ladder or access platform.

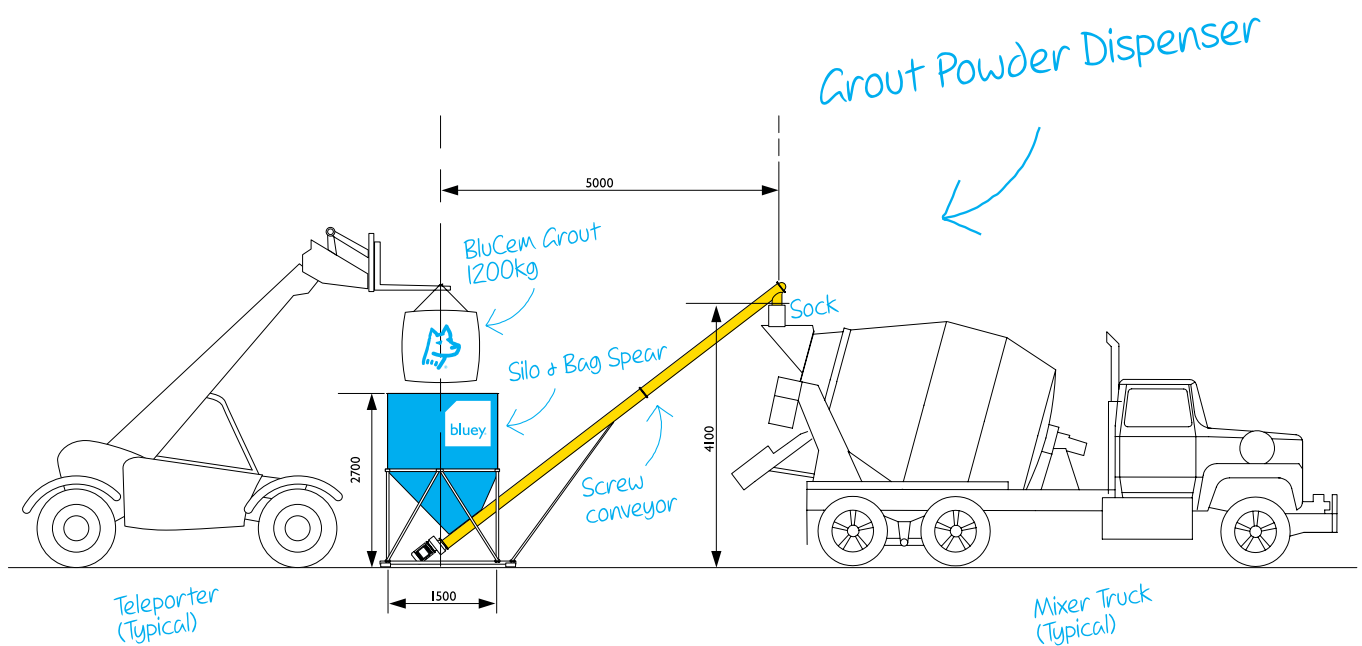
In some locations Bluey Technologies have the ability to supply BluCem HS200 as wet batched grout delivered on site in transit mixers.





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ONSITE INSTALLATION



BluCem HS200

ONSITE TESTING

ONSITE TESTING

Bleeding	ASTM C940
Early Expansion	ASTM C940
Fluidity	ASTM C939 or A51478.2 APP.C
Compressive Strength	A51478.2 APP.A





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PRODUCT SUMMARY

BLUCEM HS200 PRODUCT OFFERS

- A compliant grout solution for soil nails
- A compliant solution for ground anchors
- A compliant solution for post tensioned cables
- Fast strength gain for early loading of soil nails or ground anchors
- Versatility where addition of special fine aggregate as a solution for a bulk filling grout
- Leading edge batching and mixing in transit mixers using bulk bags
- Wet batched product in some locations



Bluey Technologies

PRODUCT RANGE

bluCem

Blu**Cem** API0
Blu**Cem** RF20
Blu**Cem** FC
Blu**Cem** HB range
Blu**Cem** HE10
Blu**Cem** HE80
Blu**Cem** HE80AG
Blu**Cem** HE80HT
Blu**Cem** HS100 range
Blu**Cem** HS200 range
Blu**Cem** EA02
Blu**Cem** GP60
Blu**Cem** UF40
Blu**Cem** UW range

bluGeo

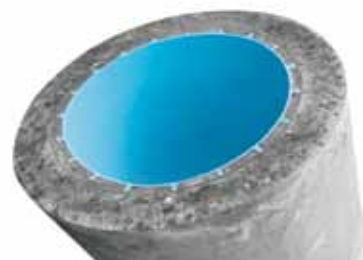
Blu**Geo** Powerthread range
Blu**Geo** SD Anchors range
Blu**Geo** ST Rock Bolts range
Blu**Geo** Swellex range
Blu**Geo** Tekflex

bluRez

Blu**Rez** Crackseal III
Blu**Rez** Crack Seal 150
Blu**Rez** Crackseal NV
Blu**Rez** Carbostop
Blu**Rez** Carbostop 42D
Blu**Rez** Epoxy 225
Blu**Rez** Epoxy 480
Blu**Rez** Epoxy 480UT
Blu**Rez** Epoxy 575 CG
Blu**Rez** Epoxy 655

bluSeal

Blu**Seal** Anchor Knob Sheet
Blu**Seal** Britdex Membrane
Blu**Seal** Moulding Putty
Blu**Seal** Dust Control 10
Blu**Seal** Road Sealer 10
Blu**Seal** Containment Liner
Blu**Seal** PVC Tunnel Liner
Blu**Seal** Injection Kit





Bluey Technologies

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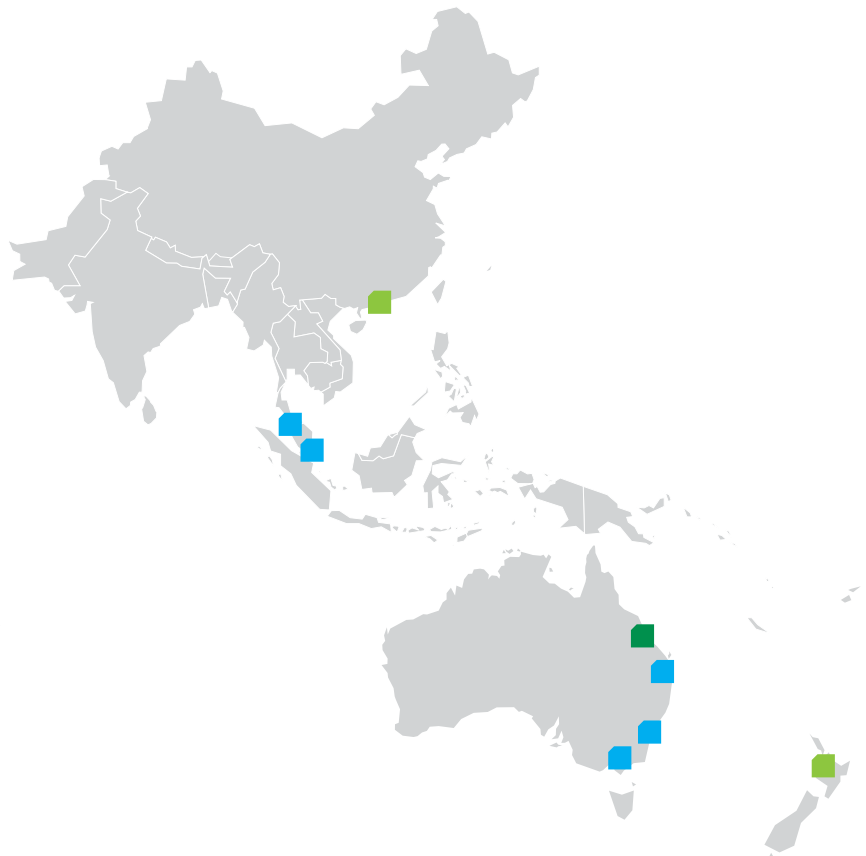
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