Technical Data Sheet

BluCem HB40

HIGH PERFORMANCE REPAIR MORTAR

BluCem HB40 is a one component cement powder which requires only the addition of water to form a structural repair cementitious mortar.

BluCem HB40 is a trowellable, easy to apply product suitable for civil engineering applications. BluCem HB40 incorporates advanced polymer additives and blended powder chemistry to form a cementitious mortar which is ultra high durability, dual shrinkage compensating and suitable for structural repairs with 100 year design life.

Application Advantages

- Medium weight
- High build
- Easy finishing and long pot life

Lifecycle Advantages

- 100 year design life
- Dual shrinkage compensation
- Suitable for structural repairs
- High chemical resistance

About the Product

BluCem HB40 is a state of the art repair mortar designed for the most challenging repair applications. The product has ultra low shrinkage, negligible permeability and is chloride and aluminum free to create a durable and chemically advanced repair mortar system. The cured mortar is designed to provide compatible strength and elastic modulus for a range of structural repair applications. BluCem HB40 is the new generation of advanced repair mortars and a benchmark for the concrete remediation industry.

Application Solutions

- Structural concrete repair
- Marine structures
- Floor repair and topping
- Cathodic protection installation

Project Specification Clause

HIGH PERFORMANCE REPAIR MORTAR - The concrete repair cementitious mortar used for this project shall be a one component cement powder which requires only the addition of water to form a durable concrete repair 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 HB40 manufactured by Bluey Technologies or equivalent shall be accepted.

Project Examples

Bridge repair, building repairs, concrete structures, retaining walls, tunnel lining, sea walls, beam repairs, road maintenance.

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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 trialled 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 A perimeter edge of at least 10mm depth must be provided around the area for application.

1.5 Priming using BluCem AP10 is recommended. Priming by saturation of the surface using water prior to application is also acceptable. Priming with epoxy primers or other products which prevent vapour transmission is not recommended.

STEEL PREPARATION

2.1 Following removal of all defective concrete, any partially exposed reinforcing bars shall be fully exposed to a depth of 20mm behind the bar.

2.2 If the bar has lost more than 20% of its original diameter then it should be replaced and the Structural Engineer must be consulted.

2.3 Where the original reinforcement is retained it must be cleaned to a standard surface purity of Sa 2.5 for chloride contaminated concrete and Sa 2.0 for carbonated concrete. This is best achieved by wet blasting or abrasive blasting.

2.4 If chloride contamination is present then high pressure wet blasting is the only acceptable method of cleaning. Priming of reinforcement is generally not required.

2.5 If the steel will be exposed to the atmosphere for several days after cleaning then an acceptable form of priming would be to mix BluCem HB40 into a slurry using BluCem AP10 and apply a cement rich coating to the steel surface.

MIXING

3.1 Add BluCem HB40 to potable water in a clean vessel using a high shear mechanical mixer for at least three minutes. Do not mix more material than can be placed in 15 minutes. Add enough water to achieve the desired consistency within the water ratio limits specified in this data sheet.

APPLICATION

4.1 Work small amounts of mixed BluCem HB40 into the primed or dampened surface. Do not exceed 40mm of thickness in any wet layer.

4.2 Roughen the surface between each layer and wait until initial set or all latent heat has dissolved prior to application of next layer.

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

Packaging	20kg bags
Water Addition	2.6 - 3.0 litres per 20kg bag
Yield	12.0 litres per 20kg @ 14% water
Application Thickness	Refer to Bluey Technologies for advice and approval on pour thicknesses with dimensions exceeding 100mm
Maximum Particle Size	1.0mm

TESTED CHARACTERISTIC	STANDARD	RESULT
Portland Cement	AS3972:2010	Complies
Aggregates	AS2758.0:2009	Complies
Compressive Strength	AS1478.2:2005	2.6 litres water per 20kg Trowellable 12MPa @ 24 hours 32MPa @ 7 days 45MPa @ 28 days 50MPa @ 56 days
Bond Strength (By Pull Off)	EN1542:1999	1.3MPa
Coefficient of Thermal Expansion	AASHTO T 336 -11	10.8×10^{-6}/°C
Chloride Diffusion*	Nordtest NT Build 443	$2.08 \times 10^{-12} m^2$/second
Alkali Reactive Particles	RMS T363	<0.1% (non-reactive)
Carbonation Resistance	CSIRO Test 1987	d<= reference concrete
Elastic Modulus	AS1012.17	20.3GPa
Drying Shrinkage	AS1478.2	430μstrain @ 7 days 590μstrain @ 28 days
Flexural Strength	AS1012.11	5.5MPa @ 28 days
Indirect Tensile Strength	AS1012.18	2.9MPa @ 28 days
Setting Time	AS1012.18	Initial set - 8 hours Final set - 10 hours
Fresh Wet Density	AS1012.5	1900kg/m^3
Chemical Resistance		The low permeability of BluCem HB40 resists chemical attack in aggressive environments

** RMS NSW requires <=2.00 x 10^{-12} m^2/second chloride diffusion for concrete in a Class C exposure classification (salt water splash zone)*

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NOTE

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