MasterCrete 5350 (formerly BluCem HB50)

Rapid setting marine high build mortar

Material Description

MasterCrete 5350 is a single-component, cement-based powder that only requires the addition of water to create a high-performance concrete repair mortar. This trowelable, highly durable product is specifically designed for civil engineering applications. MasterCrete 5350 incorporates marine-grade cement systems and advanced polymer additives, resulting in a cementitious mortar that is resistant to chloride and sulphate attack.

Areas of Application

- Repairing cracks, spalls, and surface defects in concrete structures like roads, bridges, and pavements.
- Repair and protection of marine infrastructure, including piers, wharves, and seawalls, especially in chloride-exposed environments.
- Restoration of industrial floors exposed to heavy wear, chemicals, and moisture.
- Application in wastewater treatment plants, sewer systems, and manholes, resistant to chemicals and sulphates.
- Strengthening and repair of reinforced concrete in civil projects (foundations, walls, columns).
- Surface repairs for bridges, roadways, and tunnels under high traffic and environmental stress.
- Used in tunnels and basements for long-term durability and water resistance.
- Suitable for offshore platforms and structures exposed to marine conditions.
- Repair of agricultural silos, tanks, and infrastructure exposed to corrosive environments.

Characteristics and Benefits

- Single-component - pre-blended powder, requires only water for mixing.
- Trowelable - easy to apply, providing a smooth finish for repairs.
- Marine-grade cement - high-performance cement for durability in marine environments.
- Polymer additives - enhanced for better durability, adhesion, and bonding.
- Chloride & sulphate resistant - protects against corrosion and chemical deterioration.
- Dual shrinkage compensation - reduces cracking by compensating for plastic and drying shrinkage.
- Potable water approved - safe for use in water treatment and potable water systems.
- Versatile applications - suitable for marine, industrial, and civil infrastructure repairs.
- Cost-effective - reduces the need for frequent repairs, offering long-lasting protection.

Properties

Technical Charastristics/ /Standard	Test results
Compressive strength MPa AS 1478.2 App. A	4hrs: 30 24hrs: 40 7 days: 45 28 days: 50
Coefficient of Thermal Expansion μstrain EN13295	16 weeks: 15
Drying Shrinkage (μ strain) AS1478.2	7 days: 190 28 days: 400
Modulus of Elasticity AS1012.17	25 GPa
Setting Time (minutes) AS1012.18	Initial set: 30 Final set: 45
Fresh Wet Density kg/m^3 AS1012.5	1880
Indirect Tensile Strength MPa AS1012.18	28 days: 3.3
Chloride Content AS1012.20	<0.01%
Chloride Diffusion (m^2/second) Nordtest NT Build 443	4.42 x 10^{-12}
Chloride Ion Penetrability ASTM C1202	Low
Sulphate Resistance μstrain AS2350.14	16 weeks : <50
Tensile Strength MPa AS1012.10	28 days: 3
Flexural Strength MPa ASTM C348	28 days: 6.5
Bond Strength to Primed Substrate* S1012.24	Minimum 0.75MPa

**Bond strength at 7 days: subject to adequate surface preparation*

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Application Properties	Results
Water addition	Trowel: 3.0 – 3.5 litres per 20kg Pour: 3.5 – 4.0 litres per 20kg
Thickness range	5-100mm
Pot life	15 minutes @ 20°C
Maximum particle size	0.3mm

Master Builders Solutions 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.

Application

For detailed application methodology, please refer to "Cementitious concrete repair MasterCrete repair mortars" application guide.

Surface Preparation

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.
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.
All surfaces must be free of dust, oils and surface contaminants. This may require steam cleaning or high pressure water blasting.
A perimeter edge of at least 10mm depth must be provided around the area for application.

Priming using MasterCrete PRI 5000 or MasterCrete PRI 157 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.

Steel Preparation

Following removal of all defective concrete, any partially exposed reinforcing bars shall be fully exposed to a depth of 20mm behind the bar. If the bar has lost more than 20% of its original diameter then it should be replaced and the Structural Engineer must be consulted.
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.
If chloride contamination is present then high pressure wet blasting is the only acceptable method of cleaning. Priming of reinforcement is generally not required.
If the steel will be exposed to the atmosphere for several days after cleaning then an acceptable form of priming would be to mix MasterCrete 5350 into a slurry using MasterCrete PRI 157 and apply a cement rich coating to the steel surface or to apply MasterCrete PRI 2500.

Mixing

Add MasterCrete 5350 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.
The mix water's temperature should be kept as low as possible to prevent the grout from hydrating too rapidly. As with the water temperature, the higher the air temperature the more quickly the grout hydrates and sets.

Application

Work small amounts of mixed MasterCrete 5350 into the primed or dampened surface. Do not exceed 40mm of thickness in any wet layer.

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

Curing

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

Estimating Dta

One 20kg bag will yield approximately 12.8 litres of mortar.

MasterCrete 5350				
20kg bag	Thickness mm /m^2	m^3	bags /m^3	m^2/mm thickness
12.8L	12.8mm	0.128	8	12.8

Packaging

MasterCrete 5350 is available in 20kg bags.

Storage & Shelf Life

Store in cool and dry warehouse conditions. Shelf life in these conditions is 12 months in unopened original bags.

Precautions

For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.

Specification Clause

Rapid Setting Marine High Build 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. MasterCrete 5350 manufactured by MB Solutions Australia Pty Ltd or equivalent shall be accepted.

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Disclaimer

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