MasterCrete CI 5488

Cementitious structural repair mortar with shrinkage compensation and active corrosion inhibitor

Material Description

MasterCrete CI 5488 is a ready-to-use, high-strength repair mortar containing an active corrosion inhibitor. When mixed with water, it produces a rheoplastic, non-segregating, thixotropic mortar with excellent bond to both steel reinforcement and concrete substrates.
MasterCrete CI 5488 is fiber-reinforced with synthetic fibers, contains no metallic aggregates, and is chloride free.
MasterCrete CI 5488 is tested and classified as an R4 structural repair mortar in accordance with EN 1504-3 and is approved for use in contact with potable water applications in accordance with AS/NZS 4020:2018.

Areas of Application

MasterCrete CI 5488 is suitable for structural repairs requiring mortar layers up to 40 mm thickness, including:

- Vertical, overhead and horizontal concrete repairs
- Repair of damaged or deteriorated concrete members
- Repairs to elements subjected to repetitive or dynamic loading
- Structural members such as reinforced or prestressed beams (normal or eccentric stress)
- Repair of concrete exposed to aggressive environments (sulphates, sulfides, chlorides, etc)
- Maintenance and repair works in marine, port and tidal structures
- Industrial environments where mineral oils and lubricants are present
- Potable water tanks and water-retaining structures

Characteristics and Benefits

- Excellent adhesion – forms a permanent bond to prepared concrete substrates
- High durability – low permeability and resistant to aggressive environmental exposure
- Shrinkage-compensated in both plastic and hardened stages
- Easy to apply – can be trowelled or spray-applied on vertical, overhead and horizontal surfaces
- R4 classification – tested and certified to EN1504-3 requirement.
- Exceptional carbonation resistant- every1mm equivalent to roughly 140 mm of concrete.
- AS/NZS 4020:2018 compliant (maximum exposure level) – suitable for potable water contact

Properties

All data provided in technical characteristics table verified through testing conducted by NATA-accredited independent laboratories, in full accordance with the specified test methods.

Technical Characteristics	Test Method	Test results
Bond Strength-MPa	AS 1012.24	2.5MPa
Compressive Strength-MPa	AS 1478.2 App. A	1day: 30 7days: 60 28days:85
Modulus of Elasticity-GPa	AS1012.17	28days: 33
Carbonation Resistant	EN 13295	0mm (SD: 0.13)*
Capillary absorption	EN 13057	≤ 0.5
Chloride Content	AS1012.20	0.012%
Fresh Wet Density -kg/m^3	AS1012.5	2150
Indirect Tensile Strength -MPa	AS1012.18	28days: 6.0
Flexural Strength -MPa	ASTM C348	28days: 7.4
Setting time-min	AS1012.18	Initial: 220 Final:310
Drying Shrinkage- μ strain	AS1012.13	7d: 460 28d: 750
Sulphate content	AS1012.20.1	0.71%
Electrical Resistivity -KΩ·cm	AASHTO T358	28days:69

**Based on EN 13295 (FIB 34) testing (28 days moist + 56 days CO_2), MCrete CI 5488 showed no measurable carbonation (0 mm, SD 0.13 mm). The corresponding Index of Carbonation Resistance (ICR ≈ 3.3 × 10^6) indicates over 15 000 times higher resistance than standard 40 MPa concrete, equivalent to roughly 140 mm of concrete for every 1 mm of MCrete CI 5488.*

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Application

For detailed application methodology, please refer to "Cementitious Concrete Repair MasterCrete Repair Mortars" Application Guide.

Surface Preparation

Concrete must be fully cured with a minimum direct tensile strength of 1.5 MPa. All loose traces of concrete or mortar, dust, grease oil, etc. must be removed. Damaged or contaminated concrete shall be removed to obtain a keyed aggregate exposed surface. Non-impact/ vibrating cleaning methods, e.g. grit or high-pressure water blasting are recommended. Scabble to a surface profile of ICRI CSP 5 or greater. Cut the edges of the repair vertically to a minimum depth of 15 mm.
Clean all exposed reinforcement to a minimum grade of Sa 2.5 according to ISO 8501-1 / ISO 2944-4. Ensure back of rebar is also clean.

Mixing

Pour minimum required water into a suitable mixer (low speed drill with suitable helical paddle (jiffy) or by pan mixer and add MasterCrete CI 5488 rapidly and continuously while mixing. Mix for 3-4 minutes or until a lump free, homogeneous mortar is obtained. Hand mixing of MasterCrete CI 5488 is not recommended to avoid the introduction of excessive amounts of water.
Add extra water, if necessary, until the required consistency is obtained and mix again for 2 - 3 minutes.
The amount of water to be added is highly dependent on ambient temperature and relative humidity. In hot and dry climates, slightly higher amounts of water may be necessary, the contrary in cold and humid climates.

Priming

No special primer is required. To obtain extra strong bonding, the damp substrate can be primed with a slurry brush coat of MasterCrete CI 5488 (2 parts of powder to 1 part of water). However, several layers can be applied in quick succession. If thicker layers are applied, suitable formwork has to be used.

Application

MasterCrete CI 5488 can either be sprayed or trowelled. If necessary, a wooden float may be used to level the surface. The final surface may be smoothed as desired by a wooden, plastic or synthetic sponge trowel. Trowelling after the spray application may start only when the mortar has set, that is, when fingers do not sink beneath the surface, but mark it lightly.

Curing

In normal ambient conditions, even without traditional curing, MasterCrete CI 5488 will not craze or crack due to plastic shrinkage, as often occurs with mortars, which are not protected adequately in the first 24 hours of curing. Cover with plastic sheet for 24 hours or apply MasterKure 404 or MasterKure 250 liberally to surface to achieve optimum results. Do not immerse in water to cure.

Estimating Data

A 20kg bag of MasterCrete CI 5488 mixed with 3.2 litres of water yields 10.5 litres (0.0105m^3), therefore material requirement is 19.1kg/m^2 at 10mm thickness.

MasterCrete CI 5488				
20kg	Thickness in mm /m^2	m^3	bags /m^3	m^2/mm thickness
10.5L	10.5mm	0.0105	95	10.5 m^2

Packaging

MasterCrete CI 5488 is available in 100% biodegradable 20kg bags.

Storage & Shelf Life

MasterCrete CI 5488 can be stored in tightly sealed original bags for 12 months, if kept dry and at moderate temperature.

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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.

Disclaimer

MB Solutions Australia Pty Ltd	MB Solutions New Zealand Ltd	Emergency Advice:
ABN 69 634 934 419 Suite 102, 2 Burbank Place Norwest NSW 2153 **Freecall: 1300 227 300** www.master-builders-solutions.com/en-au	45C William Pickering Drive Albany, Auckland New Zealand **Phone: +64 9 414 7233**	1300 954 583 within Australia (24hr) 0800 001 607 within New Zealand