

# MasterProtect<sup>®</sup> 8500CI

## Dual-phase Corrosion Inhibitor

### DESCRIPTION

**MasterProtect 8500CI** is a single component, ready to use, low viscosity, clear liquid that, combines the power of a 100% reactive penetrating corrosion inhibitor and a latent-phase corrosion inhibitor to mitigate electrochemical corrosion of reinforcing steel in new or aged concrete.

Only **MasterProtect 8500CI** couples the primary reactive penetrant with a second, latent-phase corrosion inhibitor. This latent-phase inhibitor activates when the concrete cracks, migrating to the reinforcing steel to provide an extra level of protection when it is most needed.

### TYPICAL APPLICATIONS

**MasterProtect 8500CI** is sprayed directly onto the surface of steel reinforced concrete structures and buildings. It is equally suited to cast in situ, precast, post tensioned, pre-stressed, GFRC, or other steel reinforced concrete. **MasterProtect 8500CI** can be used as part of an overall repair strategy using **MasterEmaco** concrete repair systems to mitigate corrosion rates within the balance of the structure and significantly reduce the possibility of “ring anode” induced spalling later.

Equally **MasterProtect 8500CI** can be used as a cost-effective preventative measure before the onset of corrosion induced problems occur.

Contact your local Master Builders Solutions representative for further information.

It is particularly suited for the protection of:

- Steel reinforced concrete, including cast-in place, precast, pre-stressed and post tensioned
- Building facades and balconies, parking structures, pedestrian walks, bridge decks and supporting elements (beams, columns, etc.), concrete docks and piers
- Marine and other high humidity environments not subject to hydrostatic pressure
- Steel-reinforced concrete exposed to de-icing salts

### ADVANTAGES

- 100% reactive ingredients. No diluents or fillers
- Easy to apply and quick-drying for faster installation time
- Provides water repellent surface to prevent penetration of moisture and chlorides
- Reduces corrosion due to the ring anode or “halo” effect
- Suitable for use in new construction and repair applications
- Effective in chloride-contaminated and carbonated concrete to significantly slow the rate of corrosion
- Latent-phase corrosion inhibitor activates if concrete cracks, or if moisture penetrates into the concrete, providing extended protection when it is most needed.
- Vapor-permeable, to prevent moisture entrapment
- Effective in high humidity environments to mitigate corrosion of reinforcing steel.
- Easy to apply surface treatment that penetrates the concrete to bond with steel and the concrete matrix to inhibit microcell (mat-to-mat) and microcell (along rebar) corrosion of steel reinforced concrete
- Normally does not require removal prior to subsequent coating applications, thereby reducing downstream labour cost compared with many other corrosion inhibitors.

### PACKAGING

**MasterProtect 8500CI** is supplied in 20 L plastic drums and 210 L drums.

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## STANDARDS

MasterProtect 8500CI's superior performance has been proved by several independent test reports.

Test Method	Description
ICCET Testing	Evaluation of performance of the surface applied corrosion inhibitors under chloride attack and carbonation.
ASTM G109	Determines corrosion effects of steel reinforcement in concrete when exposed to chloride environments
FHWA-HRT- 07-043	Corrosion tests on cracked concrete beams exposed to chlorides
M-82 Testing	Evaluates the performance of corrosion mitigation technologies in concrete repairs
ASTM C 876	Measures corrosion potentials of uncoated reinforcing steel in concrete
EIS Testing	Electrical Impedance Spectroscopy for measuring corrosion rates on reinforced concrete elements

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<b>EN 1504-2</b> <b>Principles 1.1/2.1/8.1</b> Surface protection product / hydrophobic impregnation	
Water absorption and resistance to alkali	Absorption ratio < 7,5% compared with the untreated specimen < 10% after immersion in alkali solution
Drying rate for hydrophobic impregnation	Class I > 30%
Loss of mass after freeze-thaw salt stress	at least 20 cycles later than that of the not impregnated specimen
Dangerous substances	Comply with 5.3 (EN 1504-2)

## TYPICAL PROPERTIES\*

Characteristics	Test Method	Results
Chemical Base	-	Silane
Color	-	Clear to light amber
Density (23°C)	DIN 51757	0.88 g/cm <sup>3</sup>
Viscosity (24.6°C)	Anton Paar MCR 301	0.82 cP
Flash Point	EN ISO 2719	> 60°C
Water Absorption and Alkali Resistance (Concrete type C (0.45) Serie A) compared with the untreated specimen after immersion in alkali solution	EN 13580	< 7.5% < 10%
Drying Rate (for hydrophobic impregnation)	EN 13579	> 30%
Application Temperature (ambient and substrate)	-	+5°C to +40°C
Resistance Against Freeze – Thaw Salts Stress of Impregnated Hydrophobic Concrete (C (0.70) type)	EN 13581	> 20 cycles

\*Typical values obtained under controlled laboratory conditions.

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## TYPICAL PROPERTIES\*

Evaluation	Property	Results
Alberta B388, Type 1b	Moisture Vapor Transmission Performance Waterproofing Performance After Abrasion	> 75% > 85%
NCHRP Report 244, Series II (Northern Exposure – USA)	Chloride Reduction Water Absorption Reduction	> 88% > 88%
NCHRP Report 244, Series IV (Southern Exposure - USA)	Chloride Reduction Weathering	> 90% No yellowing or discoloration

\*Typical values obtained under controlled laboratory conditions.

## APPLICATION GUIDELINES

### SURFACE PREPARATION

New concrete must be properly cured. Concrete should obtain 80% of design strength, which typically takes 14–28 days, depending on mix design.

Concrete surfaces must be dry and cleaned to remove all traces of mould oil, curing compounds, dirt, dust, efflorescence, mould, algae, grease, oil asphalt, paint, lacquers, or other coatings or any other materials that would prevent penetration.

Acceptable cleaning methods include shot or sand blasting, high-medium pressure water blasting, or grinding. An ICRI 310.2R CSP 3 – 5 is preferred for best penetration.

All delaminated, loose or spalled concrete must be removed and repaired with an approved product from the **MasterEmaco** or other approved concrete repair range. Repair mortars must be properly cured and obtain 80% of their design strength.

**MasterProtect 8500CI** can, as an additional protective measure, be applied directly to exposed rebar before repair work commences. Non-moving shallow shrinkage cracks (<0.3mm) with no structural significance are simply treated with multiple coats or ponding of **MasterProtect 8500CI**.

Other cracks or failed joint sealants should be routed clean and treated with

**MasterProtect 8500CI** before being filled with suitable joint sealant from the **MasterSeal** range or similar approved.

### MIXING

**MasterProtect 8500CI** is a ready to use product. Do not mix or add anything into the material. Shake the drum before opening.

### PLACING / APPLICATION

1. Use **MasterProtect 8500CI** as supplied. Do not alter or dilute the product in any way.
2. During application, precautions should be taken to protect the surrounding area from overspray and run-off.
3. Apply **MasterProtect 8500CI** to dry concrete. Air and concrete temperatures must be between 5°C and 40°C. Lower or higher application temperatures require prior written approval from Master Builders Solutions Technical Service.
4. Apply **MasterProtect 8500CI** to all concrete surfaces, including repairs, in a multiple coat application. Allow a minimum of 15 minutes between coats but do not re-coat before previous application is visibly dry.
5. Most applications require two or three coats applied at a rate of 200 – 300 ml/m<sup>2</sup> each. Apply minimum 600 ml/m<sup>2</sup> in total. The exact amount of **MasterProtect 8500CI** will vary due to concrete porosity, application environment and with the degree of corrosion, chloride content of the concrete and the severity of expected service conditions. Contact your Master Builders Solutions representative to discuss specific project requirements.

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6. **MasterProtect 8500CI** can be applied with low pressure, non-atomizing spray equipment with a wet fan-type spray nozzle, or by brush or roller. Sprayers should be fitted with solvent-resistant hoses and gaskets. The product can also be poured when pre-treating cracks in horizontal surfaces.

## CLEANING

Tools and mixer must be cleaned after use with water.

## COVERAGE / YIELD

Recommended application rate 600 ml/m<sup>2</sup> dependent upon concrete porosity, etc.

## WATCHPOINTS

- Do not apply at temperature below 5°C or over 40°C.
- Do not apply if rain is expected within four hours following application, or if high winds or other conditions prevent proper application.
- Allow concrete surfaces to dry for between 24 and 72 hours after heavy rain or cleaning with water before applying **MasterProtect 8500CI**.
- The effectiveness of **MasterProtect 8500CI** depends on existing corrosion rates, condition of the reinforcing steel and service conditions.
- **For professional use only**; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit [www.master-builders-solutions.com/en-ae](http://www.master-builders-solutions.com/en-ae) to verify the most current versions.

- Proper application is the responsibility of the user. Field visits by Master Builders Solutions Technical Services personnel are for making technical recommendations only and not for supervising or providing quality control on the jobsite.
- Do not alter or dilute the material as supplied.

## Working time

**MasterProtect 8500CI** only reacts with mineral based substrates. Therefore, it does not react inside the container or application pump. As long as it is kept in its original container or inside a clean sealed pump, it can be used when ever needed during its shelf life.

## STORAGE AND SHELF LIFE

**MasterProtect 8500CI** should be stored under normal warehouse conditions between -17°C and 50°C. Keep containers closed when not in use and away from naked flames, heat sources and sparks.

**MasterProtect 8500CI** has a shelf life of 18 months when stored in undamaged, unopened containers.

## QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

\* Properties listed are based on laboratory controlled tests.

® = Registered trademark of the MBCC Group in many countries

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## STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this Master Builders Solutions publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

## NOTE

Field service where provided does not constitute supervisory responsibility. Suggestions made by Master Builders Solutions either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not Master Builders Solutions, are responsible for carrying out procedures appropriate to a specific application.

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