

# MasterProtect 8500 CI

## Dual-phase Corrosion Inhibitor

### MATERIAL DESCRIPTION

**MasterProtect 8500 CI** 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 8500 CI** 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 APPLICATION

**MasterProtect 8500 CI** is sprayed directly onto the surface of steel reinforced concrete structures and buildings. It is equally suited to cast in situ, precast, post tensioned, prestressed, GFRC, or other steel reinforced concrete. **MasterProtect 8500 CI** 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 8500 CI** 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-tomat) and microcell (along rebar) corrosion of steel reinforce concrete.
- Normally does not require removal prior to subsequent coating applications, thereby reducing downstream labour cost compared with many other corrosion inhibitors.

### STANDARDS

**MasterProtect 8500 CI**'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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### 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 8500 CI** 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 of ponding of **MasterProtect 8500 CI**.

Other cracks or failed joint sealants should be routed clean and treated with **MasterProtect 8500 CI** 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 and 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.
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 and Yield:

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

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### 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 8500 CI**.
- The effectiveness of **MasterProtect 8500 CI** 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-za](http://www.master-builders-solutions.com/en-za) 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 8500 CI** 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.

### PACKAGING

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

### STORAGE AND SHELF LIFE

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

### NOTE

Technical support, where provided, does not constitute supervisory responsibility. For additional information contact your local MB Construction Chemicals Solutions South Africa (Pty) Ltd representative. MB Construction Chemicals Solutions South Africa (Pty) Ltd shall not be liable for technical advice provided.

MB Construction Chemicals Solutions South Africa (Pty) Ltd reserves the right to have the true cause of any difficulty determined by accepted test methods. Undertaking such tests is not, and shall not be deemed to be, an admission of liability or an assumption of any risk, loss, damage or liability.

### QUALITY AND RESPONSIBLE CARE

All products originating from MB Construction Chemicals Solutions South Africa (Pty) Ltd are manufactured under a management system independently certified to conform to the requirements of the quality standards ISO 9001, environmental and occupational health and safety standards.

\* Properties listed are based on laboratory controlled tests.

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### TYPICAL PROPERTIES\*

| Characteristics                                                                                                                                 | Test Method        | Results                |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|
| Chemical Base                                                                                                                                   | -                  | Silane                 |
| Colour                                                                                                                                          | -                  | 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%<br>< 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.

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

\*Typical values obtained under controlled laboratory conditions.

### DISCLAIMER

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