

# PROTECTOSIL® CIT

## Advanced Organofunctional Silane based Corrosion Inhibitor

### Description of Product

Protectosil® CIT is a single component, ready to use, low viscosity, clear liquid which combines the proven effectiveness of penetrative silane treatments for the control of moisture and Chloride ion ingress with advanced organofunctional corrosion inhibition.

### Fields of Application

Protectosil® CIT 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.

It is particularly suited for the protection of:

- Bridge decks, piers columns and beams
- Multi-Storey Car Parks, building facades and balconies
- Marine jetties and structures

Protectosil® CIT can be used as part of an overall repair strategy using Emaco® Nanocrete Concrete Repair Systems to mitigate corrosion rates within the balance of the structure and significantly reduce the possibility of “trailing anode” induced spalling at a later date.

Equally Protectosil® CIT can be used as a cost effective preventative measure before the onset of corrosion induced problems occur.

Contact the Technical Department of your local BASF Construction Chemicals for further information.

### Features and Benefits

- Dramatically reduces chloride induced corrosion of concrete steel reinforcement
- Reduces corrosion in carbonated reinforced concrete
- Works at the molecular level to effectively inhibit macrocell (rebar to rebar) and microcell (on the same rebar) corrosion
- Proven long term effectiveness in laboratory and field trials > 7 years proven performance in aggressive environment subject to deicing salts and vehicular traffic
- Equally effective in high humidity conditions
- Chemically bonds to steel, cement paste and other siliceous material – will not wash or leach out during wetting / drying cycles, ensuring extended active life
- Simple and easy to use
- Does not discolour or change appearance of concrete
- Breathable vapour permeable treatment
- Repels further ingress by chlorides and water

### Technical Data/Typical Properties

Colour	Clear
Density	0,88g/cm <sup>3</sup>
pH	7 to 8
Flash Point	63°C
Viscosity	0,95 mPa s

### Performance data

#### U.S. Federal Highways Administration Test protocol for cracked Beam Concrete

#### Test Method:

Protectosil® CIT was sprayed at the approved application rate onto standard test specimens where the concrete (W/C ratio 0,47) had been deliberately cracked along the length of the reinforcing steel to simulate real life experiences of transverse bridge deck cracking. Some specimens showed existing corrosion before application while others were others did not.

The specimens were then subject to the following rigorous conditions:

48 weeks cyclic salt water ponding (15% salt solution)

High Relative Humidities:70 –80%

Elevated temperatures: 37°C

The results are summarised below

**Corrosion Inhibition**

Specimen conditioning	Observed results compared with untreated control specimens
Cracked concrete: NO preexisting corrosion	99% reduction in corrosion
Cracked concrete WITH existing corrosion	92% reduction in corrosion

**Reduction in Chloride ingress**

Tests according to ASTM 1152 at depths of 12,5mm, 32mm, 50mm and 69 mm

Depth (mm)	Control			Protectosil® CIT treated		
	12 weeks	24 weeks	48 weeks	12 weeks	24 weeks	48 weeks
12.5	0.703*	0.861	1.020	<0.007	0.010	<0.007
32	0.321	0.628	0.645	<0.007	<0.007	<0.007
50	0.032	0.386	0.0386	<0.007	<0.007	<0.007
69	<0.007	0.040	0.040	<0.007	<0.007	<0.007

\* Chlorides measured according to ASTM 1152

**Application Procedure**

**Preparation of Substrate**

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 shotblasting, high pressure water blasting, or grinding.

All delaminated, loose or spalled concrete must be removed and repaired with an approved product from the Emaco® Nanocrete or other approved Concrete Repair range.

Protectosil® CIT can, as an additional protective measure, be applied directly to exposed rebar before repair work commences.

Non moving shallow shrinkage cracks with no structural significance are simply treated with multiple coats or ponding of Protectosil® CIT.

Other cracks or failed joint sealants should be routed clean and treated with Protectosil® CIT before being filled with suitable joint sealant from the Masterflex® range or similar approved.

**Application**

Apply Protectosil® CIT to the entire surface to be protected, including any repaired areas, using low pressure spray equipment with a suitable fan nozzle.

A total application of 600ml/m<sup>2</sup> is usually required applied in two or three separate applications. (e.g. Horizontal applications 2 x 300ml while vertical and overhead 3 x 200ml)

Allow a minimum of 15 minutes between coats (or until visibly dry).

**Application Watchpoints**

Do not apply at temperatures below 5°C or over 35°C. Allow concrete surfaces to dry for between 24 and 72 hours after heavy rain or cleaning with water before applying Protectosil® CIT.

Do not apply if rain is expected within 4 hours.

Do not alter or dilute the material as supplied.

**Coverage**

600ml/m<sup>2</sup> applied in two or three coats

*Horizontal surfaces:* 2 coats @300ml/m<sup>2</sup>

*Vertical or overhead surfaces:* 3 coats @ 200ml/m<sup>2</sup>

**Packaging**

Protectosil® CIT is supplied in 28, 205 and 1000 Litre containers.

**Storage**

Protectosil® CIT should be stored under normal warehouse conditions between -15°C and 50°C.

Keep containers closed when not in use and away from naked flames, heat sources and sparks.

**Shelf Life**

Protectosil® CIT has a shelf life of 12 months when stored in undamaged, unopened containers

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The Chemical Company

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#### **Health and Safety**

\*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

#### **Resin Products**

Can cause irritation, dermatitis or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

#### **Spillage**

Chemical products can cause damage; clean spillage immediately.

#### **Disclaimer:**

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