

degussa.

Aerosil & Silanes

Strength comes
from within



Sivento™ Silanes

Protectosil® CIT

Corrosion Inhibitor Treatment

Protectosil® CIT protects your investment!

Buildings, bridges, parking decks – steel-reinforced concrete structures represent major private and public investments. Over time, however, reinforcing steel can corrode and rust, leading to weakening of the structure if expensive repairs are not undertaken. Protectosil® CIT can help!

It protects steel-reinforced concrete with a double mechanism: Protectosil® CIT

- reduces active corrosion and
- protects against invasion by water-borne chlorides.

Even in concrete exposed to high corrosion conditions, Protectosil® CIT provides long-lasting protection. Protectosil® CIT is an innovative organofunctional corrosion inhibitor from Degussa with outstanding features:

- Suitable for cast-in-place, pre-cast and high-strength concrete
- Easy (spray-on) application for pre-cast concrete
- Effective in structures under high-corrosion conditions
- Effective in high humidity conditions

Protectosil® CIT interrupts the mechanism of corrosion!

Water is only one aspect of chloride-ion induced corrosion. Water molecules bind electrostatically to concrete, forming the conductive medium for the chloride-ion induced corrosion process that dissolves the rebar.

Protectosil® CIT acts efficiently against both aspects:

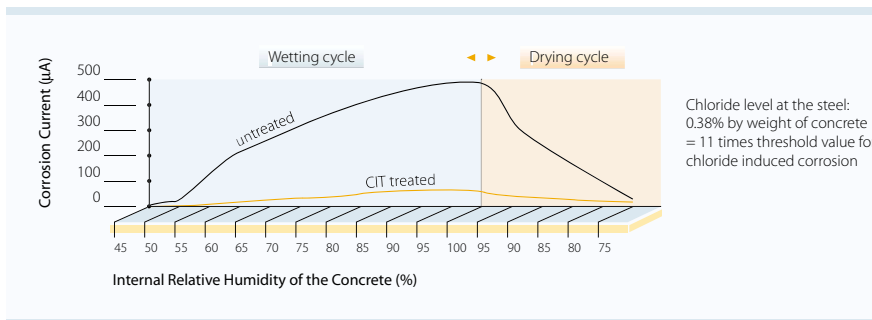
- Protectosil® CIT's proprietary organofunctional chemistry interrupts the electrolytic current, causing a substantial decrease in corrosion and the by-product rust
- Protectosil® CIT provides a deeply penetrating barrier that prevents additional water and chloride ions from reaching the rebar

The result: A dramatic decrease in corrosion!



Low corrosion at high humidity

Protectosil® CIT has unsurpassed performance even in high humidity conditions.



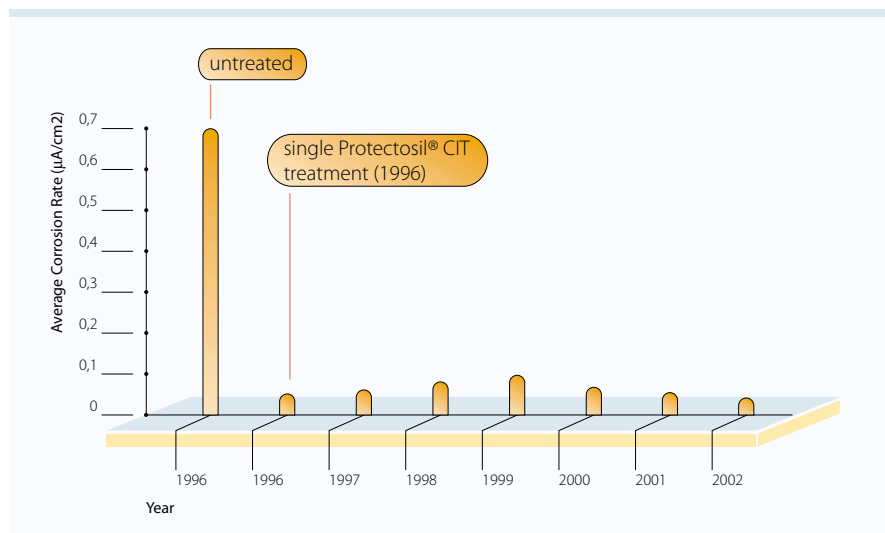
Breaking the vicious cycle of continuous concrete repair

The problems of accelerated corrosion after concrete repair (ring anode effect) is a vicious cycle. Protectosil® CIT interrupts the electrolytic current and breaks the corrosion cycle between dissimilar concrete mixes, greatly reducing future repair.

<p>Accelerated Corrosion at Interface</p> <p>rust</p> <p>rebar</p> <p>Incompatible Electrical Potentials (EP)</p> <p>Patching Material Low Porosity</p> <p>Existing Concrete High Porosity</p>	<p>rebar</p> <p>EP = EP</p> <p>Patching Material Low Porosity</p> <p>Existing Concrete High Porosity</p>
<p>Typical Concrete Repair: Remove spalled concrete, clean steel and use quick setting patching material. This sets the stage for accelerated corrosion due to dissimilar concrete mixes (ring anode effect.) Normally, water repellents or coatings are used to protect the repaired areas but this does not address electrical potential differentials between concrete mixes.</p>	<p>Concrete Repair Treated with Protectosil® CIT: Deep penetrating Protectosil® CIT interrupts the electrolytic current and equalizes the imbalance between the dissimilar concrete mixes. This inhibits the corrosion cycle, mitigates the ring anode effect and extends the life of repairs.</p>

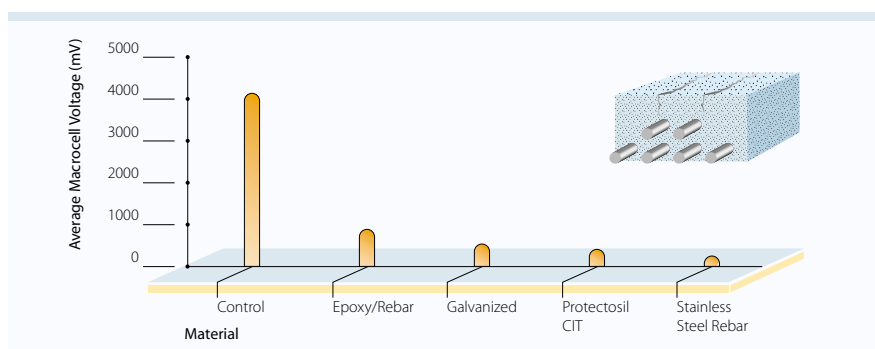
Application of Protectosil® CIT essentially halted corrosion in a parking garage for over six years!

In parking garages the corrosion conditions are challenging. In the Monroe County Parking Garage (Pennsylvania, USA) the average corrosion rate before a Protectosil® CIT treatment was $0.68 \mu\text{A}/\text{cm}^2$. After a single treatment, the rate dropped to below $0.1 \mu\text{A}/\text{cm}^2$. Even after no further application of Protectosil® CIT the protection is still going strong six years later.



A two-year study supports the long-lasting effect of Protectosil® CIT

The effectiveness of Protectosil® CIT in preventing corrosion was further documented in an accelerated test. The two year study consisted of weekly salt water ponding on reinforced concrete specimens with 0.3 mm transverse cracking. Specimens treated with Protectosil® CIT showed it was 99% effective in preventing corrosion, performance that can only be matched by using stainless steel rebar.





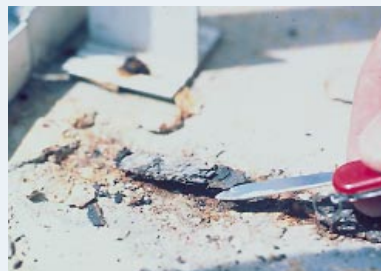
Protectosil® CIT – long-term protection and application know-how

The best repair is one which does not have to be done. This is why we recommend using Protectosil® CIT not only for repairs but also on new construction, to help you protect your investment in valuable properties. Degussa's application know-how helps you to optimize the results of your efforts:

- Amounts and application can be fine-tuned to achieve best long-term protection
- Application rate and techniques can be defined specifically for your site to keep costs low



Moisture and chlorides caused corrosion on this balcony. Using linear polarization the corrosion rate is assessed.



Even more critical, corrosion of the rebar due to these same elements can result in structural weakness.



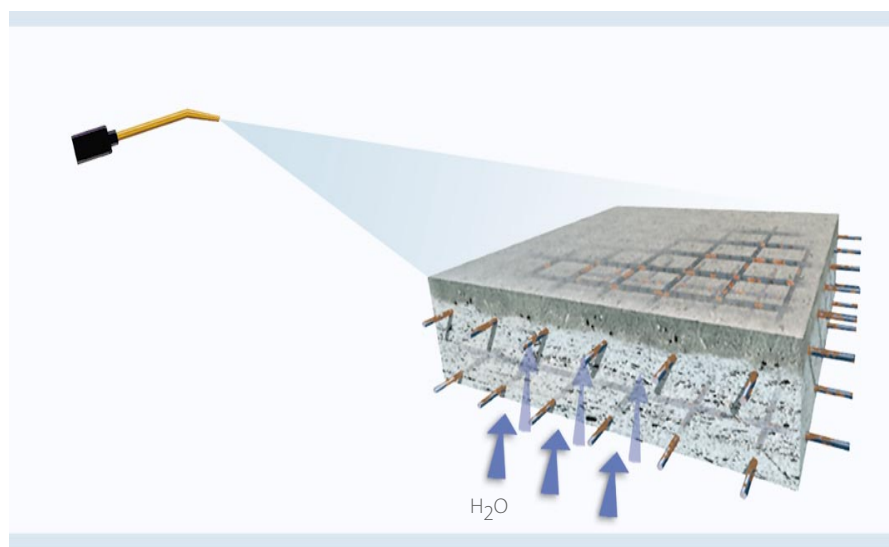
This damaged area is repaired and resurfaced.



After the repaired area has dried sufficiently, the entire balcony surface is sprayed with Degussa Protectosil® CIT to protect it.

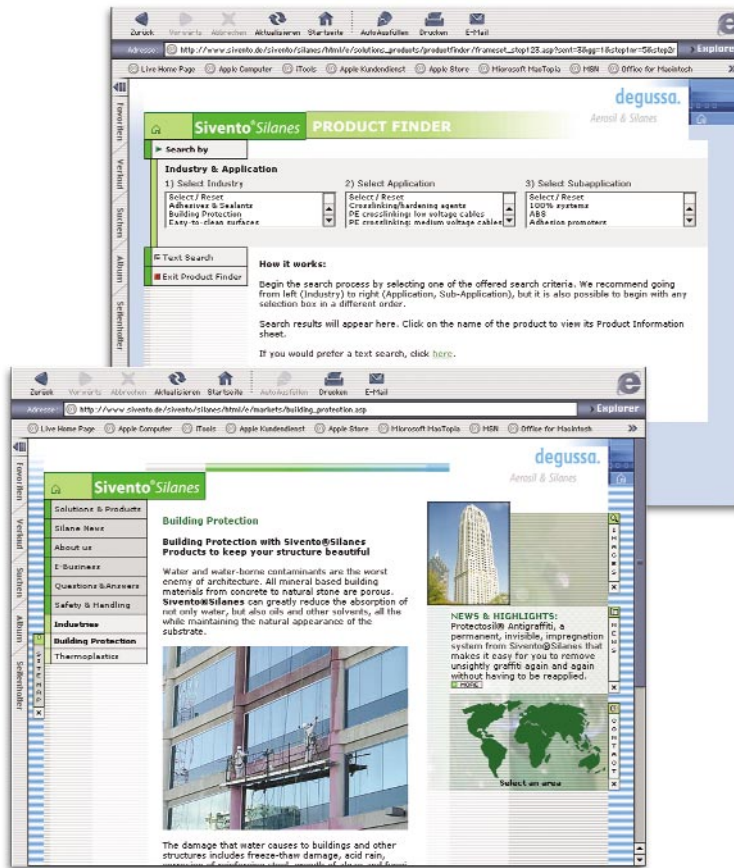
Protectosil® CIT is easy to apply and offers excellent vapor transmission

The easy (spray) application is a definite advantage of Protectosil® CIT. All that is required is a cleaned (and, if necessary, repaired) surface and conventional spray equipment.



Protectosil® CIT corrosion inhibitor treatment does not form a film on the surface. Water vapor generated from within a structure can still escape. The structure can „breathe“.

www.protectosil.com



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