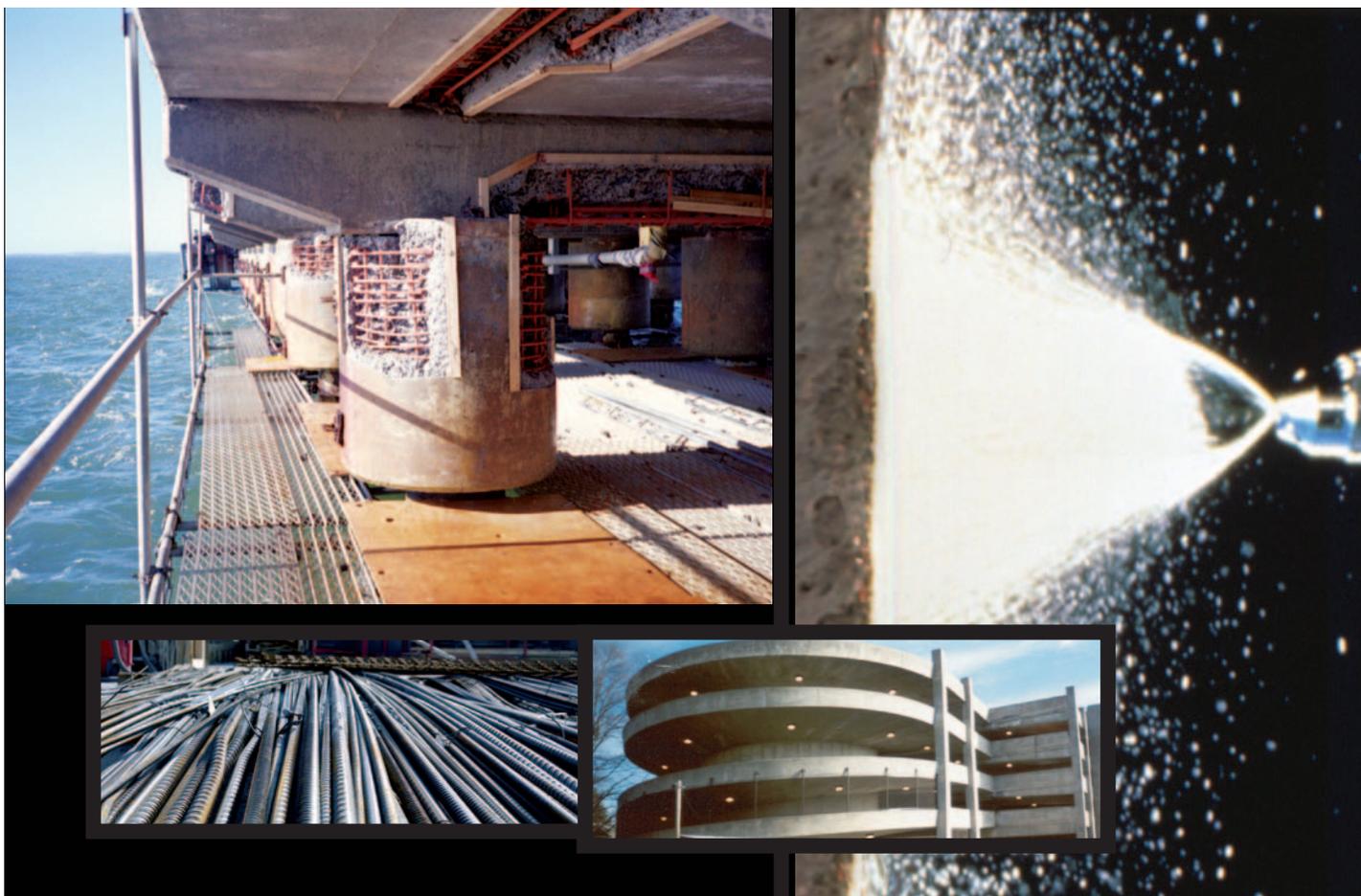




The Chemical Company

Masterseal[®] CP

Corrosion Inhibitor Technology - Long lasting and proven effective



Masterseal® CP

STOPS corrosion

Masterseal® CP Protects Your Investment

Whether public or privately owned, reinforced concrete structures represent significant capital investment.

Unfortunately, because of the well known problems of corrosion of the reinforcing steel within concrete, the lives of many of these investments are significantly shortened.

Masterseal® CP offers you, our client, the most effective long term protection by stopping corrosion in its tracks or preventing it from starting in the first place!

Masterseal® CP is simply sprayed onto the surface of reinforced concrete at a net rate of 100 ft² per gallon in 2 to 3 coats. It is suitable for

- bridge decks, piers, columns, beams and tunnels
- piers, seawalls and other civil structures
- building facades, balconies, terraces, parking garages

It is equally suited for cast in place, precast or high strength concrete.

Masterseal® CP - Latest Development in Topically Applied Corrosion Control

The first registered use of silanes for the protection of concrete as early as 1972. Since then, these small, highly mobile molecules, have provided effective solutions to protect against water borne contaminants such as chloride ions.

Because they chemically bond with the cementitious matrix they offer permanent protection. Many well documented examples show it's effectiveness even 20 years after application.

The chemists have created a silane molecule onto which they have grafted a functional organic group based on amines which are known to chemically inhibit the corrosion of steel in concrete.

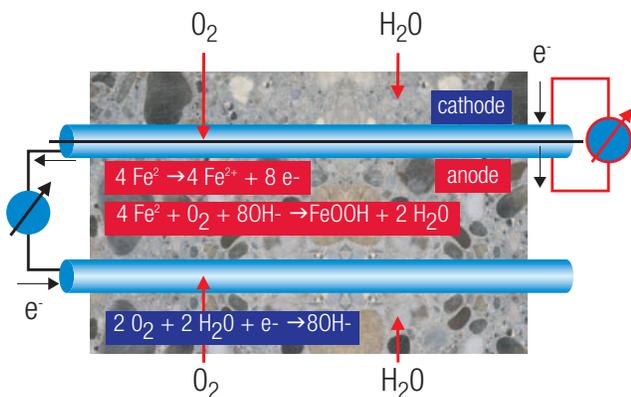
Masterseal® CP Offers Long Term Protection

Like all silanes, Masterseal® CP chemically bonds with cement and the rust layer on the reinforcing steel. It cannot be washed out nor does it leach out of the concrete over time.

How Masterseal® CP Works

Masterseal® CP produces superior results by

- strengthening or repassivating the structural steel with an organo functional amine
- blocking the electrochemical cell actions at the anode and cathode sites
- decreasing the permeability of the concrete which slows corrosion activity.



When the passivating layer of steel in concrete has been neutralized as a result of carbonation or when this layer has been attacked by the presence of chloride ions (Cl^-) anodes and cathodes are formed as part of the corrosion cell. At this point the corrosion currents occurring at the steel can be measured.



Carbonation testing of reinforced concrete.

Typical red brown coloration of advanced chloride ion induced corrosion.

Whether caused by carbonation or chlorides corrosion causes an increase in the volume of the steel which leads to expansive cracking and spalling of the concrete cover and loss of structural integrity of the steel.



Concrete Evidence - Masterseal® CP Really Does Work!

When dealing with such a potentially damaging and costly problem as corrosion in reinforced concrete, it is absolutely vital that the engineers and owners are confident in the effectiveness of any proposed solutions.

Masterseal® CP is supported by an unmatched array of both field and laboratory testing which provides absolute *concrete* evidence that it really does work!

The tests described below are based upon well-known, FHWA methods. They are reported in the Wiss Jenney Elstner Test Report No 960896 dated March 1998 and performed under the supervision of Dr. David B. MacDonald.

The data clearly show the long-term effectiveness of Masterseal® CP, even on cracked concrete subjected to repeated standing water laden with high concentrations of chloride ions.

Masterseal® CP is Proven in the Harshesst Site Conditions

Masterseal® CP has a proven track record of successful corrosion control for over 10 years. Launched in the mid 1990's in the USA, it was introduced into the worldwide market following the creation of BASF Construction Chemicals.

To support the European and Middle East market launch, a major new, independent test program was commissioned using the world-renowned Swiss Corrosion Institute SGK (Schweizerische Gesellschaft für Korrosionsschutz).

Using state-of-the-art embedded electrodes and continuous data logging and corrosion monitoring equipment, this program is testing the effectiveness of Masterseal® CP in one of the harshesst environments imaginable - the entrance to the San Bernardino Tunnel, high in the Swiss Alps.

SGK Test Results - A13 Swiss Alps

This test program is ongoing. Already, however, significant and impressive results have been obtained.

The conclusions from this most respected independent research group, after two years of monitoring and evaluation, could not be more clear.

"The Masterseal® CP treatment resulted in a clear decrease in corrosion current and even repassivation is observed on the sensors initially showing active corrosion."

"The initiation of the active corrosion is prevented in the case of Masterseal® CP treated sensors."

Summary of Results

Age of Test	Sample	Voltage Across Resistor		Voltage Across Resistor		Half Cell Potential (mV)
		µV	% of Control	Ohm	% of Control	
After 12 weeks	Control	2870	100	363	100	-561
	Masterseal CP Treated from Start	126	4	806	220	-59
After 48 weeks	Control	3845	100	260	100	-589
	Masterseal CP Treated from Start	42	1	2833	1090	-170
	Masterseal CP Treated after 12 wks	300	8	1003	386	-358

W.J.E. Test Program based upon FHWA test method.

1. Samples prepared as per Fig 2. Good quality concrete with preformed cracks parallel to bars
2. After 28 days curing Masterseal® CP applied. Control samples left untreated.
3. Cyclic testing commences
 - 4 days 15% NaCl solution
 - 3 days drying
4. Corrosion currents, resistance of concrete, potentials and chloride contents all measured.
5. After 12 weeks half of Control samples allowed to dry and Masterseal® CP applied.
6. After 1 week drying period cyclic testing restarted and continues for further 36 weeks.
7. Results monitored and reported Test Report No 960896.

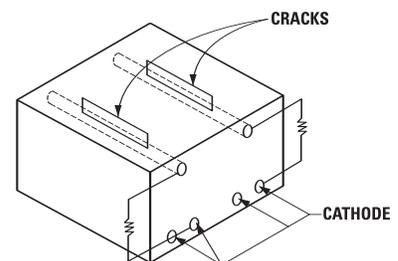


Fig. 2: Schematic Diagram of Specimens

BASF Building Systems is an industry leader in the manufacture of construction chemicals and building products for the construction industry.

Its seven widely recognized brands – Sonneborn®, Thoro®, MBT Protection and Repair, ThoRoc®, Hydrozo®, SELBY and UCRETE® provide an expansive product offering that includes joint sealants, waterproofing membranes, grouts, concrete repair products, clear sealers, performance flooring, and wall coatings.

The **Sonneborn®** product family includes Sonocrete® concrete repair systems, Sonoshield® waterproofing systems, Sonolastic® sealant systems, and Sonocoat® wall coating systems.

The **Thoro®** brand offers a broad spectrum of products including waterproofing, surface patching materials, and high-build wall coatings. Its popular products; Acryl 60®, Thoroseal®, Waterplug®, Thorolastic®, and Thorocoat® have set high-quality standards in the industry.

MBT Protection and Repair offers superior integrated solutions for concrete repair and protection, high-performance cementitious flooring, and exceptional precision grouts. Popular product lines include MASTERFLOW®, MASTERTOP®, EMBECO®, EMACO®, CONGRESIVE®, and SHOTPATCH®.

Hydrozo® offers an exceptional line of clear penetrating sealers to protect buildings and open-air structures from moisture, chloride-ion intrusion, and airborne pollutants. The Enviroseal® brand offers a line of water-based water repellents.

UCRETE® has been solving challenging industrial flooring problems around the world for more than 30 years. Long-term toughness and durability in extreme industrial environments has earned UCRETE® its reputation as "The Floor that Lasts". There are no equals.

SELBY epoxy, polyurethane, acrylic and neoprene materials have been protecting and beautifying floors and walls since 1925. From 1/4" industrial grade floors to highly decorative systems, Selby materials offer the diversity and historical performance required by today's specifiers and building owners.

BASF has a truly unique ability to bundle its products into comprehensive "building systems" that offer designers and contractors effective single-source solutions to their building and construction problems. Our sales force, technical services, and research & development groups, work together to ensure we meet your project needs.

For every building challenge there's a BASF Building Systems solution... everything you need to build, repair and protect.



**BASF Construction Chemicals, LLC–
Building Systems**

889 Valley Park Drive
Shakopee, MN 55379

www.BuildingSystems.BASF.com

Customer Service 800-433-9517
Technical Service 800-243-6739

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