



CRETE DEFENDER™

Permanent Concrete Protection.



About Us

After years of covering up damaged concrete with a variety of expensive concrete coatings that didn't stop the deterioration, we at CreteDefender, Inc., thought: "There has to be a better way!" The CreteDefender P2 solution was created 19 years ago, and it's been applied in hundreds of locations. The recent addition of our CreteDefender MS2 product gives long lasting protection for a wide variety of surfaces, including all types of concrete. Both products provide exceptional, long-lasting protection to prevent deterioration of concrete from salts, water and the chemicals it carries, freeze-thaw cycles, and dusting. The P2 product also protects against abrasion and helps restore the health of older concrete.

Both products help you avoid the costs of replacing concrete and the safety hazards presented by deteriorated concrete, as well as provide environmental benefits, including a much lower carbon footprint from not needing to replace or repair concrete.

The following pages provide information about both products, including where you can use them. Please contact us if you need additional product information or want to inquire about product availability.



CRETE DEFENDER™
Permanent Concrete Protection.

CreteDefender, Inc.

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**CreteDefender P2 has
treated over
50,000,000 square feet
of concrete!**



Avoid this damage by applying either CreteDefender P2 or CreteDefender MS2

How Concrete Gets Damaged

Salt, water and other chemicals get into the pores and break down the concrete. Traffic and wind-borne debris erode it.

Concrete can be damaged in several ways. Water infiltration carries chemicals that deteriorate the concrete's chemical bonds. When freezing occurs, water also expands up to 9%, weakening the structure of the concrete. Rebar corrosion breaks the structure from the inside. Abrasion erodes the structure from the surface. CreteDefender P2 slows or halts each of these damaging processes.

The key is to make the concrete denser and more abrasion resistant so it can stand up to freeze/thaw cycles, wind, rain, grit, chemicals, and temperature extremes. CreteDefender P2 does that.

Other Solutions

Membranes (coatings and sealers) and water repellants are the common solutions used to prevent concrete deterioration. Membranes fail when the coating is punctured or wears off. Sealers are especially thin membranes with short lives. Water repellants, like silanes and siloxanes, penetrate up to 0.6 cm, so last longer than membranes. However, they need to be reapplied every 3-5 years.



Company History

CreteDefender P2 was invented in 1995, but our first experience with the product was in 2003. Stuart Hoeke, our President, owned a business that applied coatings, stencils, and overlays to existing concrete. He found that he was only covering up the damage, not stopping or preventing it.

Stuart had a client contact him to remove a competitor's coating that had failed on the sidewalks at a shopping center. The client would heavily salt the sidewalks in the winter to keep them safe for their customers. In the process of removing the coating, Stuart noticed that the concrete was deteriorating. Salt had degraded the concrete and, while it was still sound, it was soft and very easy to scratch. He wanted to address the source of the problem.



Stuart looked for a solution that would make the concrete harder AND prevent damage from salt and freezing. He wanted to save his client the expense and interruption of having to tear out and replace their sidewalks.

The solution was CreteDefender P2. Remarkably, removing and replacing the concrete would have cost over 50 times as much as CreteDefender P2.

Today, after 12 years of protection, the sidewalks are exactly as he had left them... hard and undamaged.

In 2010, after using CreteDefender P2 on this project and over half a million other square feet of concrete across the US, we acquired the product and founded CreteDefender, Inc.

CreteDefender P2 – Permanent Protection

CreteDefender P2 addresses the problems that cause concrete damage.

CreteDefender P2 works IN the concrete, not ON the concrete, so it can't wear off or wear out. It permanently makes concrete impervious to the damage caused by salt and water. It densifies and hardens the concrete. It maintains the chemical health of the concrete.

CreteDefender P2 is...

- A water-carried chemical treatment made of reactive silicates and surfactants, allowing for deep penetration.
- For portland cement-based concrete, and can be applied any time after the concrete is set.
- For use in all types of environments: temperate, extreme hot, extreme cold, and where frequent temperature fluctuations occur.
- Permanent. It only needs to be applied once. It does not sit on top of the concrete like a coating or membrane would. Since it does not sit on the surface, it cannot be worn off.

What CreteDefender P2 Will Do:

- Make concrete impervious to damage caused by water and salt.
- Prevent freeze/thaw damage.
- Restore the pH of the concrete.
- Eliminate dusting and flaking.
- Resist stains and damage from chemical spills.
- Prevent damage from sulfates and acid rain.
- Harden and increase the abrasion resistance of the concrete.

Available Sizes:

- 55 gallon (208 liter) drum
- 20-foot container of 40 drums
- 40-foot container of 80 drums
- 325 gallon tote



Six-year-old concrete sidewalk. The left side is treated with CreteDefender P2. The right side is untreated. Don't wait until you see concrete damage, protect it PERMANENTLY today with CreteDefender P2.

Where CreteDefender P2 is Used:

CreteDefender P2 can be used anywhere you want to keep concrete from deteriorating.

- Does winter wreak havoc on your concrete?
- Do you want to avoid the cost and hassle of repairing or replacing concrete?
- Do you want to keep your concrete looking the way it looks now?
- Do you want to prevent concrete dusting or scaling?
- Do you want to protect your concrete's reinforcement?

If you answer "yes" to any of those questions, you have a use for CreteDefender P2.

- Inside or outside, even in extreme cold
- Broom finished or machine troweled
- Slab, pre-cast, structural
- Horizontal or vertical, old or new

CreteDefender P2 is for use on portland cement-based concrete and mortar, with a minimum compressive strength of 2000psi (14 MPa), and a water-to-cement ratio between .36:1 and .5:1. It will not work on non-cementitious materials, CMU's, block, brick, or other porous cementitious structures such as pervious concrete. It is not compatible with acid stained concrete.

How CreteDefender P2 Works

CreteDefender P2 works by...

- Penetrating into the concrete about 2 centimeters deeper than water alone would penetrate.
- Reacting with the lime in concrete to create a permanent gel which hardens just like concrete.
- Filling the pore and capillary structure.

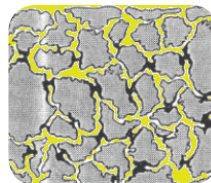
CreteDefender P2 is better because it...

- Is not a coating.
- Can't wear off. It becomes a permanent part of the concrete mix.
- Permanently protects concrete from deterioration caused by salts, freeze/thaw cycles, abrasion, water, chlorides, and sulfates.
- Saves you money by dramatically reducing costs of maintenance and repair.
- Is quick and easy to apply.
- Is environmentally safe, non-hazardous, non-toxic and non-flammable.
- Has no smell, no volatile organic compounds (VOCs).
- Arrests damage already occurring in your concrete.
- Is not affected by traffic, abrasion, UV exposure, or weather.

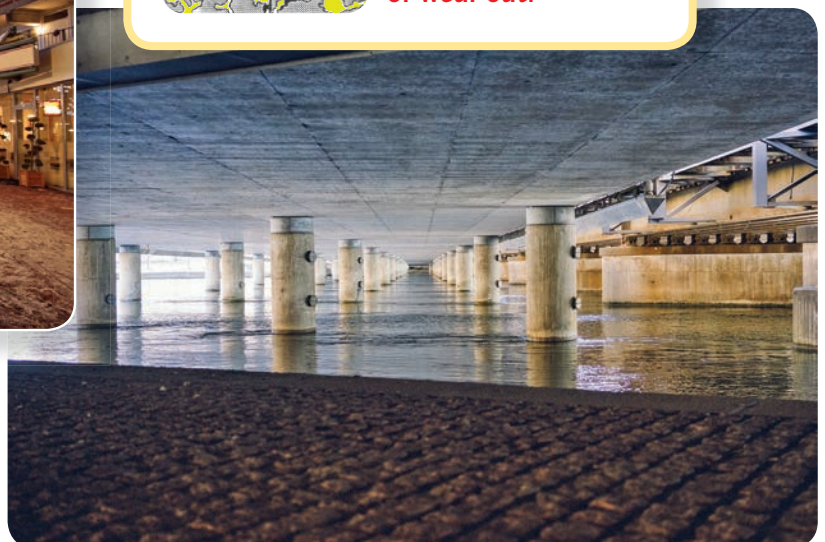


Concrete is porous, and contains a network of capillaries and pores that are formed during the hardening process. This process also creates Calcium Silicate Hydrate, or C-S-H, which is what gives concrete its hardness and strength, plus an unused by-product called calcium hydroxide, commonly known as "lime".

CreteDefender P2's formulation penetrates into the concrete and reacts with the lime in concrete to create more C-S-H, which then fills the pore and capillary structure, preventing water and the natural and man-made chemicals it carries from entering the concrete and causing damage.



CreteDefender P2 stays IN the concrete, not ON the concrete, so it can't wear off or wear out.



Examples of Uses and Clients

- Roads, highways and bridges

Idaho DOT, Ohio DOT

- Shopping centers

Tanger and Settlers Green (NH) Outlet Malls

- Resorts and hotels

Water World in Bucharest, Romania

- Schools and universities

University of Rochester (NY)

- Stadiums

NY Yankees and NY Mets

- Manufacturing and warehousing

PepsiCo

- Airports and airbases

US Marine Corps

- Ports

Docks, piers and other marine structures

- Seafood processing

Bellingham Cold Storage

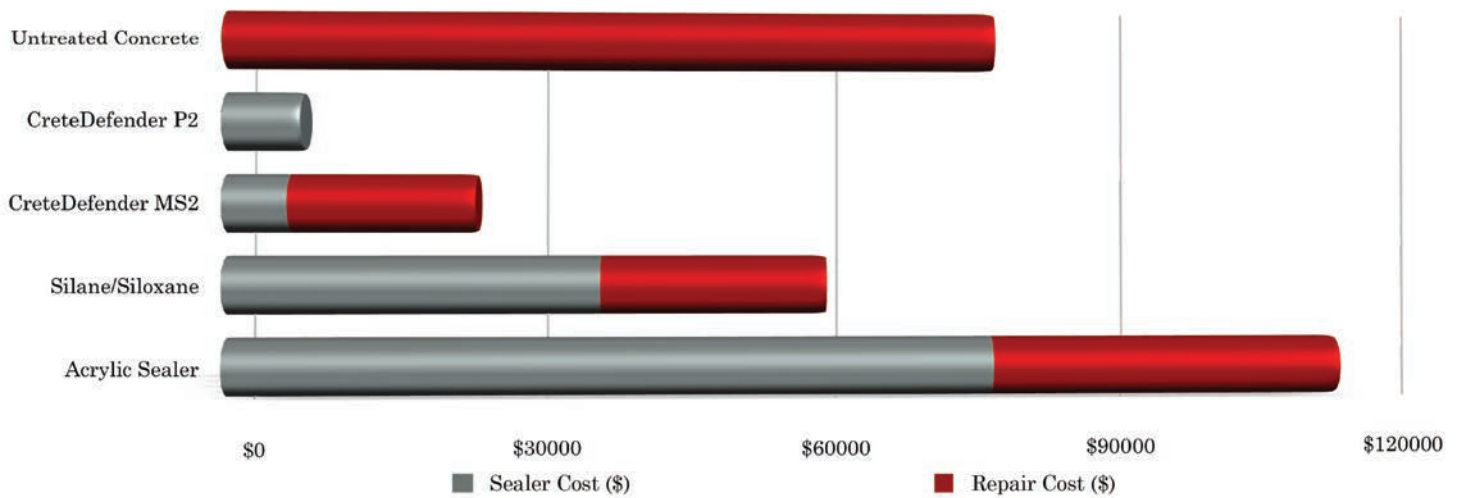
- Salt storage facilities

CASE STUDY Tanger Outlet Centers

In 2007, CreteDefender was applied to the sidewalks at the Tanger Outlet Center in Park City, Utah. Over 100,000 pounds of salt are used each year on the 70,000 square feet of sidewalks. To date, there is zero damage to the sidewalks. Tanger now specifies CreteDefender for all its shopping centers.



25-Year Costs for Concrete (10,000 s.f./929 m2)



Comparison of 25-year life costs of 10,000 square feet of concrete, including re-application and repair costs determined by product failure rates. Data from Life-365™ concrete analysis software.

CASE STUDY US Marine Corps

The US Marine Corps has Joint Strike Fighter and F-35 Lightning II Harrier concrete landing pads. Chipping, flaking, and overall wear on these pads creates flying concrete fragments that endanger the aircraft, and their pilots and ground crew. The jet blast at take off and landing is like a sandblaster, causing the tremendous wear that leads to the deterioration of the pads. The engineering department for the Marines wanted to limit, if not eliminate, this damage and the safety hazards it caused. The Marines selected CreteDefender, which was first put on a pad in the deserts of Yuma, AZ, in early 2012.



CreteDefender MS2 – Multi-Surface Sealer

Get 10-year protection on all your exterior surfaces

Are you looking for an inexpensive, long-lasting way of protecting not only good quality concrete, but also concrete block, masonry, brick, and pavers from salts and other chemicals, as well as freeze/thaw damage? If so, CreteDefender MS2 (for "Multi Surface Sealer") is your solution.

CreteDefender MS2 Is...

- A water-carried chemical treatment that creates a clear, impervious water repellent barrier that penetrates the surface at least 1/4 inch and remains effective for 10-15 years.
- For use in all types of environments, temperate, extreme hot, extreme cold, and where frequent temperature fluctuations occur.

What CreteDefender MS2 Will Do:

- Prevent freeze/thaw damage.
- Prevent salt damage by repelling water and the chemicals carried by water, including salts, from the concrete surface.
- Resist stains and damage from chemical spills.
- Prevent damage from sulfates and acid rain.

Re-application is recommended once water stops beading up on the surface. No sheen is created on the treated surfaces.

CreteDefender MS2 is Better Because it...

- Protects all types of hard surfaces from sources of deterioration, such as salts, freeze/thaw cycles, abrasion, water, chlorides, and sulfates.
- Is not affected by traffic, abrasion, UV exposure, or weather.
- Does not change the slip resistance or color of the concrete.
- Saves you money by dramatically reducing costs of maintenance and repair.
- Is quick and easy to apply.
- Is environmentally safe, non-hazardous, non-toxic and non-flammable.
- Has no smell, no Volatile Organic Compounds (VOC's).



Where CreteDefender MS2 is used

CreteDefender MS2 can be used anywhere you want to keep various types of hard surfaces from deteriorating.

- Concrete of all types:
 - High and low quality
 - Inside or outside
 - Broom finished or machine troweled
 - Slab, pre-cast, structural
 - Decorative (stamped, stenciled, or polished)
 - Horizontal or vertical, old or new
- Concrete block
- Masonry
- Brick
- Concrete pavers, and other hard cementitious products

For Best Results, Use P2 and MS2 Together

If you have good quality concrete and are looking for a solution that will provide both abrasion resistance and water repellency, you may apply a combination of one application of CreteDefender P2 and one of MS2. This combination is also useful in restoring the pH and stopping further deterioration in older concrete.

Comparison of Exterior Concrete Sealers

CreteDefender P2: Permanent Protection from salts and other chemicals and freeze/thaw damage, while arresting deterioration and hardening the concrete. For good-quality concrete.

CreteDefender MS2: Multi-Surface Sealer for all concrete, as well as masonry, concrete block, pavers, and stone. Protects from salts and other chemicals and freeze/thaw damage for at least 10 years. Repels water.

	CreteDefender P2	CreteDefender MS2	2-Step CD (P2 & MS2)	Crystalline Sealer	Silane/Siloxane	Acrylic	Urethane	Epoxy
Depth of Penetration (in inches) (in cm)	Up to 4 in. Up to 10 cm	1/4 in. 0.6 cm	Up to 4 in. Up to 10 cm	Up to 8 in. Up to 19 cm	1/4 in. 0.6 cm	0 0	0 0	0 0
Re-Application Interval	Permanent	10 years	10 yrs for repellent	Permanent	5 years	1 year	3 years	5 years
Freeze/Thaw Protection	Yes	Yes	Yes	Yes	Yes	No	No	No
Salt Protection	Yes	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes*
Chloride Ion Protection	Yes	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes*
UV Sensitive	No	No	No	No	No	No	No	Yes
Suitable for Vehicle Traffic	Yes	Yes	Yes	Yes	Yes	No	Limited	Yes
VOCs	No	Low	Low	Yes	Yes	Yes	Yes	Yes
Toxic	No	No	No	No	No	Yes	Yes	Yes
Ease of Application	Easy	Easy	Easy	Difficult	Easy	Easy	Difficult	Difficult
Multi-Surface Use (on poor concrete, masonry, stone)	No	Yes	No	No	No	No	No	No
Arrests Ongoing Deterioration	Yes	No	Yes	No	No	No	No	No
Prevents Dusting & Abrasion	Yes	No	Yes	Sometimes	No	No	No	No
Stabilizes pH	Yes	No	Yes	No	No	No	No	No
Water Proofing	No	No	No	Sometimes	No	No	No	No
Water Repellent	No	Yes	Yes	No	Yes	Yes*	Yes*	Yes*
* Effective as long as membrane is un-damaged								

CreteDefender P2

Product Data

Product Specifications

CreteDefender P2 is shipped in ready-to-use form.

- Package Sizes: 5 gallon pail - 54 lbs./24.5 kg, 55 gallon drum - 530 lbs./240 kg, and bulk tote
- Container quantities: 20-foot container of 40 drums, 40-foot container of 80 drums
- Specific Gravity: 1.41 @ 20°C
- Freezing Point: 30°F/ -1
- PH: 11.3
- VOC's: None (ASTM-D2369)
- Appearance & Odor: Colorless, turbid liquid. No odor to slightly soapy odor.
- Flammable: No
- DOT Hazard Class: None
- Hazards: Health: 2 (Acute) Irritating to the eyes, skin, and mucous membranes. Do not ingest.
- Coverage: 75 - 225 sq.ft/gallon (1.9 - 5.75 m²/liter) per application
- Drying time: 2 - 10 hours
- Drying time between applications: Minimum of 6 hours. Surface must be dry.
- Drying time before traffic/paint/coatings: 24 hours
- Initial Cure: 24 hours
- Complete Cure: 75 Days
- Shelf Life: 2 years, unopened

Application

CreteDefender P2 is applied by spraying on clean, dry concrete or mortar. All sealers and coatings, if any, must be removed from the concrete or mortar in order for

CreteDefender P2 to be properly applied. CreteDefender P2 must not be applied if rain is expected within 24 hours of application. Avoid contact with aluminum or glass.

CreteDefender P2 must be applied using a method that saturates the concrete for 20-30 minutes. You are not applying a membrane or coating. Any puddles or ponding must be removed from the concrete using a stiff broom or brush, moving the P2 until there is none left standing on the surface of the concrete. On machine troweled concrete, use bristle brooms or mechanical scrubbing machines until CreteDefender P2 starts to react and becomes slippery.

Two applications are required for all exterior concrete. One application is needed for interior, machine troweled concrete. A minimum of 6 hours is required between applications.

Coverage:

How much CreteDefender P2 is needed is entirely dependent upon the porosity of the mortar or concrete and the weather conditions. Coverage rates will be better when applied out of direct sunlight during the coolest part of the day. Early morning or during the night are best. CreteDefender P2 is a reactive chemical, and it is critical to allow the concrete to absorb as much as it can in 20-30 minutes on each application.

For estimating purposes, CreteDefender P2 generally averages 125 - 150 sq feet per gallon (3 sq meters/liter) per application. The amount you use may be significantly more or less, depending on weather and porosity.

Test Data

TEST	METHOD	RESULT
Chloride Ion	AASHTO T-259	Cut by 55%+
Freeze/thaw	ASTM-C666	97.8 durability factor
H2O Absorption	ASTM-C642	.33% by weight
Scaling/freeze-thaw	ASTM-C672	Zero (0)
Abrasion Resistance	ASTM-C779	+45%
Chlorides	Modified EPA300	0.056%

CreteDefender MS2

Product Data

Product Specifications

CreteDefender MS2 is shipped in ready-to-use form.

- Package Sizes: 5 gallon pail - 54 lbs./24.5 kg, 55 gallon drum - 530 lbs./240 kg, and bulk tote
- Freezing Point: 30°F/ -1°C
- PH: 13
- VOC's: None
- Appearance & Odor: Colorless liquid. No odor to slightly soapy odor.
- Flammable: No
- DOT Hazard Class: None
- Hazards: Health: 3 (Serious) Irritating to the eyes, skin, and mucous membranes. Do not ingest. Wear protective face shield, gloves, and clothing covering skin.
- Coverage: 200 sq.ft./gallon mixed (4.9m²/liter) mixed
- Drying time: 1-6 hours
- Drying time before paint/coatings: No coatings/paints can be applied after MS2 application
- Initial Cure: 24 hours
- Complete Cure: 24 hours
- Shelf Life: 2 years, unopened



Application

CreteDefender MS2 is applied by spraying or rolling using a 3/4" nap roller onto clean, dry concrete, block, etc. All sealers and coatings, if any, must be removed from the surface in order for CreteDefender MS2 to be properly applied. CreteDefender MS2 must not be applied if rain is expected within 24 hours of application. Avoid contact with aluminum.

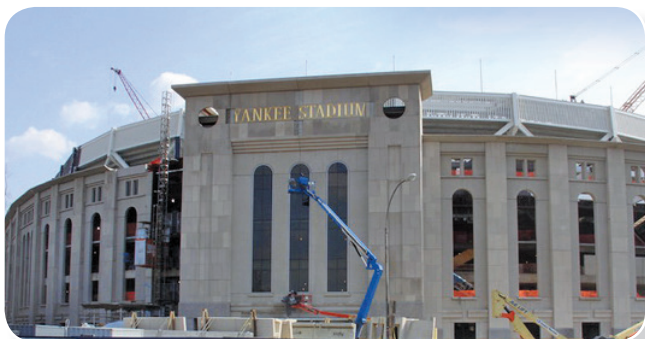
CreteDefender MS2 must be applied using a method that saturates the surface at a rate of 200 square feet per gallon. You are not applying a membrane or coating. Any puddles or ponding should be removed from the concrete using a stiff broom or squeegee, moving the MS2 until there is none left standing on the surface of the concrete.

CreteDefender MS2 is highly alkaline (pH 13) and protective eye wear (face shield recommended) and clothing must be worn when mixing and applying.

Only one application is required. Product requires 24 hours of curing time before it will repel water. Do not allow water to contact a treated surface for 24 hours after application. If water contacts the treated surface before 24 hours have elapsed, you will need to re-apply CreteDefender MS2.

Coverage

Coverage rates are 200 square feet per gallon. CreteDefender MS2 is a reactive chemical that bonds to the surface layers of cementitious or masonry products.



We are Here to Help

The CreteDefender team is here to serve you. To place an order, ask questions, or request further assistance please contact us or our authorized distributor for your country.

Information contained herein is, to the best of our knowledge, true and accurate, but all recommendations or suggestions are made without guarantee except to the extent of the CreteDefender product warranties provided. Since the conditions of use are beyond our control, CreteDefender, Inc., disclaims any liability in connection with the use of our products and information contained herein. No person is authorized to make any statement or recommendation not contained herein or on the CreteDefender, Inc. websites at www.cretedefender.com and www.bestconcretesealer.com, and any such statements shall not bind CreteDefender, Inc.



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