

Specification Data Sheet

*FOR ENGINEERS AND ARCHITECTS*

1. PRODUCT NAME

PROTEC III: ORIGINAL CHEMICAL CURE

1. MANUFACTURER

Cornerstone Coatings Global Inc.

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1. PRODUCT DESCRIPTION

Protec III: Original Chemical Cure is a hardener and densifier that goes into the concrete and chemically penetrates and reacts with the top wear surface, producing strong bonds in the concrete called Calcium silicate Hydrate (CHS). These strong bonds permanently change the density of the concrete whereby making it harder, denser and stronger. This stronger concrete resists shaling, pitting, dusting, abrasion, and many corrosive chemicals.

* + Curing - Protec III: Original Chemical Cure is vital to achieve the complete hydration process of curing concrete. When applied to properly placed, structurally sound, freshly finished concrete, Protec III: Original Chemical Cure will uniformly cure the concrete through a chemical cure and moisture retention process. Protec III: Original Chemical Cure is a chemical reaction within the concrete that changes the weak bonds (calcium hydroxide) into the strong bonds called calcium silicate hydrate (CSH). This process aids in retaining the necessary moisture to ensure a proper cure. The result is less hairline checking on new concrete because the cure process has been slowed right down. Visually you can see how much longer Protec III: Original Chemical Cure treated concrete stays darker (retaining that critical moisture for a proper cure) than untreated concrete.

\*\*TESTING 92% greater moisture retention during the critical 24 hour cure period.

* + ASTM C309 - Protec III: Original Chemical Cure does not leave a membrane on the surface of the concrete, if you want to fulfill the requirements of ASTM C309 use Protec III W.H.A.M.

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* Hardening - Protec III: Original Chemical Cure increases the hardness and abrasion resistance of new and existing concrete.

ASTM C418 - 67% increase in the hardness of concrete wear surface.

ASTM C1353 - 46% increase of abrasion resistance, Taber Abrasion Resistance Test 1000 cycles. ASTM C803 - In various tests compression of the top wear layer has been measured and calculated to be up to 50 mpa from a 30 mpa mix design. ASTM C803 is a determination of the hardness and compression values.

* Dustproofing - Concrete dusting appears on the surface of the concrete as dust or powdery-chalk. This dust can easily be removed with a broom, but it is a perpetual problem that will NOT resolve itself. It is actually the top wear layer of the concrete turning to dust. The presence is often indicative of a weakness of the wearing surface. Dusting can be caused by poor finishing techniques used while bleed water is still on the surface, improper curing, excess amount of clay in the concrete or exposure to elements before the concrete was fully cured. Inadequate ventilation can also be a culprit particularly in closed quarters like basements. This environment allows carbon dioxide to build up and create a chemical reaction that affects the surface strength of the concrete called carbonation. Concrete dusting rarely indicates a structural problem with the concrete, but it can be a troublesome problem. Using Protec III Original Chemical Cure will substantially strengthen the concrete and virtually eliminate dusting.

ASTM C1353 - 46% increase in abrasion resistance at 1000 cycles

* Bonding - Protec III Original Chemical Cure is the ideal product to cure concrete before the installation of flooring adhesives because it eliminates the dusting and efflorescence problems that commonly cause delamination problems with flooring. Surface membranes can interfere with the proper bonding of the adhesive, and must be removed prior to application of the adhesive. Protec III Original Chemical Cure does not leave a surface membrane as all other cure and seals do, so there is no costly expense and time intensive labor to remove a surface membrane. Protec III: Original Chemical Cure prepares the treated surfaces for paints, caulking compounds, adhesives and floor coverings. This product does not contain silicone and is coatable and compatible with any type of covering when standard surface preparation guidelines are followed.

ASTM D3359 testing shows at least 22% increase in epoxy adhesion. This test evaluations products ability for flooring adhesives, glues, paints, caulking to adhere to concrete.

* Neutralizing the Effects of Alkali - Alkali is often referred to in the industry as salts or efflorescence. It is a white powder that will show up on the surface of the concrete that is unsightly. It is brought up to the surface from the ground water by hydrostatic pressure and will migrate through the concrete and destroy it if it sits on the surface because of its alkaline properties.
* Protec III Original Chemical Cure will help reduce or completely stop the efflorescence from being carried to the surface because it fills in the pores of the concrete by changing the poor bonds of calcium hydroxide which is the alkali into the strong bonds of calcium silicate hydrate or CSH. It is this process that fills in the voids in the top wear layer and stops the migration of water which also stops the migration of the salt or efflorescence from appearing on the surface.

ASTM C642 - 72% reduction. This test evaluates products ability to reduce absorption.

1. USES

* Use on new or existing interior power trowel concrete, pre-cast concrete, poured in place walls, heavyweight concrete block, exterior broom finish, mortar, plaster, exposed aggregate and any sand aggregate portland cement combination.
* Product is compatible with flooring adhesives, paints, and caulking
* Anywhere a non-toxic low odor cure is needed to meet LEED requirement
* Ideal applications include warehousing, distribution facilities, aviation hangars, office buildings, hospitals, schools, manufacturing plants, food processing and distribution buildings, pulp and paper mills or other type of facilities.

1. COMPOSITION & MATERIALS

* Protec III Original Chemical Cure complies with all USDA regulations and is nontoxic, noncombustible and nonflammable. When applied properly it is not harmful to lungs or hands. It contains no volatile organic compounds (VOCs).

1. PACKAGING

* Protec III Original Chemical Cure is available in 55 US gallon (205 Litre) Drums and 5 US gallon (18.9 Litre) Pails and Totes (1040 Litre)

1. COLOR AND FINISH

* Protec III: Original Chemical Cure is transparent and will not change the natural appearance of masonry or concrete. On smooth steel-trowelled concrete surfaces, a natural shine will appear between 6-12 months after treatment. This can be accelerated by burnishing after curing. The shine is caused by the hardening and densifying effects of Protec III: Original Chemical Cure as well as by the abrasion from cleaning and use of the floor. A routine cleaning program using a floor scrubber with abrasive type brushes will accelerate and enhance the shine. The shine will last the lifetime of the surface.

# PHYSICAL CHARACTERISTICS

* Dilution: None, use as supplied

# Odor: Mild

* VOC's: 0

# Clean-up: Water

* Freezing Point: -6C

# SHELF LIFE: 3 yrs in original unopened container

1. CLEAN-UP: water

# BENEFITS

* Reduces or eliminates hairline cracking in new concrete.
* Stops concrete popping and shaling that is associated with membrane cure and seals
* Hardens and strengthens within the concrete top wear layer, protects against deterioration and produces a floor that is resistant to traffic. Rather than eroding, the floor surface actually polishes with use. ASTM C418 - 67% Increase in Hardness of the Concrete Wear Surface
* Treated surface resists dust, oils, greases and other surface contaminants, such as tire marks. Reduces tire squeel.
* More Effective than Water Curing when applied immediately after the finishing operation; stabilizes and significantly enhances abrasion resistance and durability of surface. Tested to have a 92% greater moisture retention during the critical 24 hour cure period.
* Eliminates dusting which enhances surface bonding of adhesives and floor coverings, also paints and caulking compounds. Compatible with any type of covering and flooring adhesives when standard surface preparation guidelines are followed.
* Restricts water migration through the concrete eliminating efflorescence problems
* Reduces Vapor Transmission and Reduces Radon Gas Emissions
* Compatible with Dry Shake Hardeners
* VOC's - Zero
* Environmentally Safe and Permanent
* Food Safe Approved
* Equipment is cleaned using water only.

1. LIMITATIONS

* Additional yearly maintenance of this product is required where heavy use of de-icer/road salts are allowed to accumulate.
* All curing agents and sealers must be removed before the application of Protec: Original Chemical Cure.
* Where the concrete is abnormally soft and porous, pre-treatment with Protec III: Original Chemical Cure is required. Numerous coats of Protec III: Original Chemical Cure may be required in poorly finished, poorly cured, broom finish, or scarified floors.
* In cases of excessive moisture, and/or extremely hydrostatic pressure from beneath the slab, this reaction does not prevent excessive salt migration.
* Protec III: Original Chemical Cure is not to be used to seal lightweight block or other extremely porous masonry that contains actual holes and air pockets.

1. ASTM TESTING

|  |  |  |  |
| --- | --- | --- | --- |
| **ASTM** | **Name of Test** | **Uses of Test** | **Results** |
| **ASTM C418** | Standard Test Method for | Increase in hardness | 67% increase |
|  | Abrasion Resistance of |  |  |
|  | Concrete |  |  |
| **ASTM C1353** | Taber Abrasion | Abrasion Resistance | 46% increase abrasion |
|  |  |  | resistance at 1000 cycles |
| **ASTM C642** | Test Method for Density | Evaluate products ability | 72% reduction |
|  | Absorption and Voids in | to reduce absorption |  |
|  | Hardened Concrete |  |  |
| **ASTM C803** | Penetration Resistance | Determination of | Increase from 30 mpa to |
|  |  | hardness and | 50 mpa in compression |
|  |  | compression values | strength |
| **ASTM B117** | Standard Method of Salt | Used as a chloride ion | 57% decrease in |
|  | Spray | permeability test | permeability to Salt Spray |
| **ASTM D3359** | Surface Adhesion | Evaluates products ability | At least 22% increase in |
|  |  | for flooring adhesives, | epoxy adhesion; no |
|  |  | glues, paints, caulking to | change to polyurethane |
|  |  | adhere to concrete. | adhesion |
| **ASTM G23** | Weathering Treated |  | Ultraviolet light and water |
|  | Samples |  | spray exposure had no |
|  |  |  | adverse effect on treated |
|  |  |  | samples |