

CRYSTAL LOK®

Waterproofs when applied
to Either Side of Concrete

Product Technical Data

Product Data

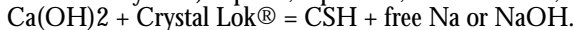


Basic Use: Crystal Lok® waterproofs, seals, hardens and dustproofs structural concrete in one application, permanently: protects concrete from ultraviolet attack; from common acids, salts & chloride ion intrusion, alkalis, petroleum oils, solvents, alcohol including wine and beer, vegetable oils, animal and fish oils, fats and fatty acids, ore, ore tailings, and other common substances. It protects from freeze-thaw spalling. It prevents efflorescence. It stops most liquids permeability when applied on either side of concrete when not caused by cracks or other structural flaws.

After application, normal surface maintenance may be utilized.

Crystal Lok® is nontoxic and has been approved for potable water applications. Apply by spray, roller or sponge pad.

Function: Crystal Lok® absorbs into concrete surfaces, reacts with efflorescence-forming water-soluble calciumhydroxide Ca(OH)₂ found in most concrete, to create permanent new concrete CSH (calcium silicate hydrate) in pores, capillaries, hairline cracks, voids.



CSH is insoluble in water and stops migration of water and most other liquids to zero = watertight, permanently. Some vapor passes. See "Tests and Technical Documentation" for test details.

Crystal Lok® works equally well on new or aged concrete, above or below grade, garden walls, slabs, performed tilt-ups, bridge decks, roads, pipe, basements, foundations, sidewalks. Crystal Lok® penetrates deeply into capillaries & pores of concrete, as it crystallizes becoming part of the concrete. It cannot discolor or separate. Properly installed it is permanent and raises surface pH.

Application conditions:

- Review and follow "STANDARDS AND SPECIFICATIONS"
- Surface may be damp or dry, but not having running water. If standing water or beading is present, sweep or blow off with air and clean the surface. Break surface tension of hot concrete by spraying with water, to allow penetration by Crystal Lok®.
- Surface is to be free of any other coating, oils, grease, paint or contaminants. Crystal Lok® must absorb into the surface to perform its function. Test surface for absorption by sprinkling water. If surface absorbs water Crystal Lok® will absorb. If water beads, surface is not suitable for Crystal Lok®. Can be stored indefinitely. If frozen thaw thoroughly and mix well.

Weeping Concrete? Use Crystal Lok®

Technical Data

Description: Water based, unpigmented, aqueous sodium silicates, penetrating aids & defoamers.

Coverage: 300-200 sq ft/gallon (5 sq meters/ltr)(one coat) to 100 sq ft per gallon (3 light coats)

Appearance: Clear

Odor: No odor

VOC: < 0.01 mg/L (Compliant)

Solubility in water: 100% dispersible

Flammability: Not flammable

Flash point: Over 200°F

pH: 11.5 - alkaline

Weight 5 gallon pail

(18.93 liters): 49 pounds

Weight 55 gallon drum

(208.18 liters): 530 pounds

Packaging:

CL-5 5 gallon pail

CL-55 55 gallon drum

Shelf life: Indefinite . Store between 38°F and 125°F

(3°C and 41°C). Avoid continuous direct sunlight.

Avoid freezing.

Shipping Classification: DOT 55 No Restrictions

UN Tariff Code: 3824.90.00



Number of applications: (depends on quality of concrete, on surface density & rate of absorption)

Dustproof - 1

Waterproof new concrete -1

Waterproof aged concrete -2 (at 30 minute + interval)

Waterproof & harden industrial floors -3 (1 & 2 in first hour.

3rd at 3rd day-mist to find areas absorbing more.)

Walk on when eye-dry: 15 minutes. Cure will bond tools/hoses to the concrete - Place equipment on floors after 12 hrs.

Recommended top coat time:

Varies with topcoat: 24 hours to 30 days

Permeability of tested concrete: zero = watertight:

Positive face - ASTM D5084-90

0 - watertight at least to 175 feet depth

Negative face - ASTM D5084-90

0 - watertight at least to 135 feet depth

(Laboratory terminated tests with no failures in any test samples.)

CAUTION: Product is alkaline pH 11.5. Avoid contact with skin and eyes. In case of contact, flush immediately with plenty of water. If irritation continues call a physician. Refer to the Material Safety Data Sheet and label for precautions.

Technical Services

Technical advice or service on suitability for specific applications and end-use requirements is available by calling Corro Seal Division,

Joan T. Geiger Enterprises, Inc.; 800-237-1573 (360-678-1905).

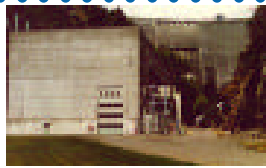
See web pages for application instructions, MSDS, SSPC Specifications -- www.corro Seal.com. Made in U.S.A.



• LIGO -Laser Interferometer
Gravitational Wave Observatory
(Cal Tech University)US Atomic Energy
Commission site, Hanford, Washington
[www.ligo.caltech.edu/LIGO_web/PR/
scripts/photos.html](http://www.ligo.caltech.edu/LIGO_web/PR/scripts/photos.html)

Seal 4 mile above - ground concrete tunnel interior and exterior, to make watertight, to protect reinforcing bar steel from corrosion. Seal floors of test facility buildings to harden against movement of 2200 pound test equipment carts. 1997 & 1999.

- Oregon State University system-seal exterior walkways, stairs, decks, landing. Self applied. Mike Beyers, Industrial Applicators.
- 2002-2003 maintenance program.



- Ross Dam Hydroelectric Facility, moisture protection to hold paint on concrete structures; Seattle City Electric, Seattle, Washington
- Western Hawaii Water Lily Society-Kona Coast, Hawaii-on ponds, waterfalls and concrete blocks - to halt pH and sediment leaching from concrete and seal surface against bacterial colonization, to keep ponds clear and plants and koi healthy. Self Applied.

CRYSTAL LOK® Waterproofs when applied to Either Side of Concrete (the Positive or the Negative Face)

CRYSTAL LOK® STANDARDS AND SPECIFICATIONS

Surface Preparation Specifications and Application Specifications:

- **SSPC-SP 13/NACE No. 6 Surface Preparation of Concrete**
 - **SSPC Guide 11 Guide for Coating Concrete**
 - **SSPC-TU 4 Field Methods for Retrieval and Analysis of Soluble Salts on Substrates**
 - **ASTM D 4258-83 Standard Practice for Surface Cleaning Concrete for Coating**
 - **ASTM D 4259 Abrading Concrete**
 - **ASTM D 4262 Test Method for pH of Chemically Cleaned or Etched Surface**
 - **ASTM C 805-02 Standard Test Method for Rebound Number of Hardened Concrete**
 - **ASTM D 4285 Standard Test Method for Indicating Oil or Water in Compressed Air**
- Other SSPC or ASTM Standards applicable to any specific structure.

Application Guides

APPLICATION METHOD: DO NOT DILUTE.

- Coverage on broom finished concrete is normally 200 square feet per gallon (1 liter for 5 square meters). Smooth troweled concrete may only require one gallon per 300 square feet.
- Mix thoroughly. Agitate while applying. Ingredients are in suspension and will settle out. Before use always clean tanks, hoses, compressors, air tanks of any contaminants which can damage the surface.
- Apply by airless or compressed air sprayer, hand-pump-type garden sprayer, roller, brush, sponge mop. Remove or spread excess with squeegee, rags, sponge mop, compressed air. May rinse with water at any time after applying.

NEW CONCRETE

Crystal Lok® may be applied any time after the surface water sheen has disappeared and the concrete can be walked upon. Apply after forms have been stripped and form-release or curing agents are removed. Test first by sprinkling water to assure absorbency. See "Test and Technical Documentation" for Hardness variations possible.

AGED CONCRETE Clean surface is required.

- If not to be blasted, clean with powerwasher, detergent or TSP, muriatic acid wash, solvents, as indicated by surface conditions. Remove all buildup of grease, wax, soot, oil and other deposits, coatings or paint prior to application of Crystal Lok®.
- Surface must be able to absorb water if it is to absorb Crystal Lok®. Test by sprinkling water on it. If the water beads up the surface may have oil or a previously applied organic coating/sealer which must be removed for Crystal Lok® to be effective.
- If pH is 9-12, clean, rinse with fresh water & apply.
- If acid washed, wait for surface pH to restabalize after the acid wash. This may take up to 3 days to restore pH to range of 9-11. Then apply Crystal Lok®.
- If pH is 9 or below ASTM/SSPC Standards suggests carbonized surface be removed by blasting or grinding to expose healthy concrete. This surface layer of carbonated white off-color is concrete weakened by ultraviolet attack or by CO2 from electrical machinery, etc. Ca(OH)2 has been leached out. Apply Crystal Lok® to newly exposed concrete.
- After applying Crystal Lok® old absorbed oils, salts, moisture, other contaminant particles may be expelled to the surface. Flush and squeegee with fresh water to remove contaminants driven out of the concrete. NOTE: Crystal Lok® does not leave a visible residue of any color, but can be polished without changing the texture/roughness of the surface.

- Columbia Basin Junior College; 25 year-old concrete damaged from use and from grass fertilizer to retard deterioration.
- Washington State Parks System•Bathrooms and shower floors, to ease cleaning and eliminate odors. Self Applied 2000-2001, Sequim Bay State Park
- British Columbia Water & Wastewater treatment facilities - tank interiors and exteriors, pipe, walks, drives.
- Georgia State University, University Student Plaza, uv protection, freeze/thaw spalling; Atlanta, Georgia.
- Iowa Beef Products Packing Company; treat floors for all cattle pens. Sand-blasted to roughen & singe coat application. Walla Walla, WA.

DYED CONCRETE: Test any dyed/colored concrete for colorfastness by applying a noncritical area with Crystal Lok®. Waterbased dyes may not be permanent when exposed to Crystal Lok®, and may alter color unevenly.

TOPCOATING: Test for and follow paint and adhesive manufacturers instructions and specifications for application on treated high alkaline concrete. Check for recommended anchor profile, pH compatibility, mineral salts contamination, moisture vapor.

- After application of Crystal Lok® resulting surface profile may require blast, blastrak or light acid wash to roughen surface to facilitate topcoat adhesion. Test for suitability of topcoat product to surface.
- Crystal Lok® raises surface pH to the range of 11.5-12.5. Paint manufacturers may require lower surface pH. Adjust pH with light acid wash followed by rinse and squeegee or use Simple Green (pH 3) or other mineral salts remover to remove residual sodium, silicates, other contaminating salts & to lower the surface pH temporarily to achieve topcoat pH requirements. At minimum rinse with water then test pH.
- Test for topcoat or adhesive manufacturers moisture specification before applying Crystal Lok® & topcoat to determine that required results are to be achieved at ± 42% vapor reduction.

ALWAYS DO A TEST PATCH TO INSURE COMPATIBILITY.

LIMITATIONS:

- Requires Portland cement concrete, mortar.
 - Not suitable for clay brick or other clay based products.
 - **Do not puddle or allow Crystal Lok® to dry on the surface** if residue-free surface is required. Remove unabsorbed excess immediately by spreading with air, wiping up with cloth or sponge mop, squeegee off. Excessive Crystal Lok® from puddles leaves hard white CSH crystalline deposits requiring blasting, grinding or acid etch to remove. Same crystallization as inside the concrete. May rinse with water as soon as product is absorbed into concrete.
 - Will permanently etch glass, aluminum, porcelain, enamel, plastic on contact. Protect from exposure to spray or run-off.
 - Do not apply over painted surfaces. May soften paint if oversprayed onto it.
 - If concrete will not absorb water, it will not absorb Crystal Lok®.
- Test absorption by sprinkling water on surfaces.
- Will not penetrate if concrete has had prior treatment with similar materials.
- Test sample area for suitability.
- Do not apply below 38° F and above 110° F. Use water to break surface tension on hot surfaces.
 - Not compatible with Class C fly ash formulation as that is considered to be self cementitious and pozzolanic. Class F fly ash & silica fume are usually OK-Test first.
 - J.T. Geiger Enterprises, Inc. does not warrantee application of topcoats over a Crystal Lok® - treated surface.

WARRANTY, LIMITATION OF REMEDIES AND LIABILITY:

Manufacturer warrantees that the material is made of the constituent parts described. The manufacturers liability is limited to the replacement or refund of purchase price upon return of unused portion with proof of purchase. There are no guarantees, either expressed or implied which extend beyond the description in this paragraph. User/Applicator is solely responsible for determining whether Crystal Lok® is fit for a particular purpose is suitable for users application and for results obtained.

- Willow Valley Residential Association, sidewalk and street concrete; defend against road de-icing salt, freeze/thaw spalling; Lancaster, PA
- City of Bend, Oregon Sewage Treatment Facility, sewage acids & alkaline, salts, uv protection, freeze/thaw spalling, odor protection.
- J.R.Simplot Corporation (worlds largest fresh vegetable packaging plant) 100,000 square foot processing floor required regular resurfacing. In 1994 floor was blasted to remove old coating & roughen then applied CRYSTAL LOK™ to harden rough surface and seal. No resurfacing required as of 6/99. Pasco, Washington
- Province of Nova Scotia specifies Crystal Lok® for all bridge decks, other structures, for freeze/thaw, protection from ice and road salts. Halifax, N.S.