EnviroSeal™

ENVIROSEAL IN COATING CONCRETE

EnviroSeal Penetrating Concrete Sealer is a ready-to-use, reactive sealer, formulated for maximum penetration and sealing of capillaries in concrete and cementitious substrates against liquids and gases.. It permanently seals new or old concrete, mortar, plaster, stucco, and porous limestone, indoors and outdoors - foundation walls, concrete slabs, and driveways, concrete block retaining walls, sidewalks, patios, pool decks and sidewalks. When applied to concrete or masonry, soluble silicates react with calcium hydroxide to reduce porosity and permeability of the concrete matrix. This serves to increase the hardness and chemical resistance which, in turn, increases the service life of the surface.

EnviroSeal is completely inorganic, water soluble and has been shown to be environmentally friendly. Membrane-forming sealers can be worn away in high-traffic areas, leaving the unprotected concrete unsightly and susceptible to chemical attack. Since EnviroSeal penetrates into the concrete, it won't scratch or peel off. In fact, the surface of the concrete treated with EnviroSeal can be polished with a buffing machine in order to achieve a high sheen, glassy look.

EnviroSeal is not intended to seal cracks, joints, or gaps. Not suitable for concrete less than 3 inches thick, fiber-reinforced concrete, concrete with little or no cement content (lightweight, dry pressed, spilt face, or popcorn blocks) or concrete containing additives like integrally colored concrete, patching or leveling compounds.

HOW DOES ENVIROSEAL FUNCTION?

EnviroSeal is a cost-effective concrete sealant, but like cement itself, it yields the best results to those who thoroughly understand how it works.

When dry cement is mixed with water, the cement particles begin to dissolve and react to form a calcium silicate hydrate (C-S-H). The volume of C-S-H is greater than the original unhydrated cement particles, so as C-S-H forms it fills in porosity, providing strength and rigidity to the cement. Another by-product of cement hydration is calcium hydroxide (Ca(OH)2). The presence of Ca(OH)2 adversely affects the properties of cement because it is attacked by acids and other chemicals. It also tends to crystallize as hexagonal platelets near the paste/aggregate interface, resulting in a poorly packed (i.e., low density) weak area. Applying EnviroSeal, however, reduces the amount of Ca(OH)2 near the surface because EnviroSeal reacts with Ca(OH)2 to form C-S-H (see chemical equation below). As a result, the surface is less permeable, more resistant to chemical attack, and overall more durable.

Ca(OH)2 + sodium silicate = C-S-H + free Na or NaOH

The C-S-H gel formed from this reaction is insoluble in water and more resistant to acid and other chemical attack.

All concrete is porous, although the type and amount of porosity can vary greatly from one concrete to the next. These differences occur because of the water-to-cement ratio, amount of working, quantity and type of aggregate, temperature and various other factors. Depending on its quality, method of placement and curing, a standard concrete can contain a significant percentage of Ca(OH)2 which also contributes to porosity when it dissolves. Therefore, it is essential to convert the Ca(OH)2 to C-S-H in order to increase the life of the concrete.

WHY IS THIS IMPORTANT?

The final strength and properties of concrete are impacted by the degree of calcium silicate hydrate it contains relative to its porosity. Therefore, EnviroSeal increases concrete strength by replacing soluble lime with the C-S-H. EnviroSeal increases the density of concrete because C-S-H forms where the Ca(OH)2 used to be. And, since chemicals attack concrete (and rebar) by penetrating the pores, the presence of more C-S-H increases the durability of the substrate.

USING ENVIROSEAL FOR CONCRETE TREATMENT

New concrete should be properly cured for a minimum of twenty eight (28) days before EnviroSeal is applied. (Refer to ASTM standards for proper curing methods.) Also, the silicate treatment may be satisfactorily applied to clean concrete at any later time.

Surface Preparation

EnviroSeal should not be applied to any surface that has already been treated with compounds that might prevent its penetration (e.g. paint, oil) or that interfere with the conversion of free lime (Ca(OH) to C-S-H. Since EnviroSeal may be less effective if there is no free lime near the surface, carbonated concrete should be abraded.

Make sure that the substrate is porous. Confirm that it readily absorbs drops of water or apply the sealer in a test area. If needed, increase surface porosity by sanding, grinding, or acid etching. If acid is used for etching or cleaning, neutralize the surface with a solution of baking soda in warm water or an ammonia solution. Then thoroughly rinse the surface with water. The concrete must be thoroughly dry before EnviroSeal application. Allow the surface to dry for at least 2 days after rain or pressure washing. You can speed up the drying process by using fans or dehumidifiers. Protect glass, ceramic tile,

aluminum, plants, and non-masonry surfaces from overspray, splashes, and wind drift. EnviroSeal bonds to glass – avoid contact with eyeglasses and wristwatches.

Before any concrete is treated, the area must be thoroughly cleaned. The surface should first be swept with a broom to remove any loose dirt. Then it should be wetted and scrubbed with soap or other cleaning compounds. The abrasive action removes the film of consolidated dirt and exposes the true wearing surface. The surface should then be scrubbed again with soapy water. To get the best penetration the floor should be allowed to dry thoroughly for a minimum of 24 hours, depending on atmospheric humidity.

Factors Affecting EnviroSeal Penetration Depth

Penetration depth is a critical property for the penetrating sealers, such as EnviroSeal, to function effectively. The deeper the penetration, the greater the thickness of concrete strengthened, thus improving wear resistance, the life span of traffic surfaces and durability.

The desirable depth from 1/4 inch in poured concrete and up to 4 inches in cinder block and other similarly porous materials. However, the regular attainment of such penetration will require considerable care in surface preparation and in assuring that the concrete is properly dry. The quality of the concrete will also be a major factor in the depth of penetration obtained.

Conditions for Application

Air and surface temperatures must be above freezing during application and for three days after. Do not apply to hot surfaces in direct sunlight or in strong wind. Avoid rain for 24 hours after application.

Suggested Tools for Application

A low-pressure sprayer (50 psi or below), equipped with a fan-tip nozzle such as a manual pump sprayer or electric sprayer. A paint roller may be used if/when spray application is not an option.

Application

EnviroSeal is ready to use - do not dilute.

Before EnviroSeal application, dampen the concrete (or cementitious) surface with water prior to application, using a sprayer or mop, leaving no puddles or dry spots. A damp surface helps the sealer penetrate faster and deeper. For those both cleaning and sealing on the same day, the rinse step following cleaning will make re-dampening the surface unnecessary.

Thoroughly shake or mix the pail prior to opening. Pull out the pour spout and fill the sprayer (if applicable) leaving head space for building pressure.

Apply EnviroSeal in a thick, continuous film, adding more sealer to faster-absorbing areas.

Do not over-apply. Broom or roll out puddles or excess run-off. Puddles will leave a hard glassy or white film on the surface, which is not paintable and is difficult to remove.

Coverage Rates

Poured Concrete	2 applications	1,000 sq ft per 5-gal pail
Concrete Block	3 applications	500 sq ft per 5-gal pail
Cinder Block, Sand Stone, Grout or Similarly Porous Surfaces	4 applications	400 sq ft per 5-gal pail

Apply EnviroSeal in two to four “wet-on-wet” applications 30 to 45 minutes apart. (After 30-45 minutes of spraying, return to the original starting point and apply the subsequent applications while the surface is still damp.)

Vertical Surfaces

Prevent over-application by protecting flooring adjacent to the wall being treated.

Spray EnviroSeal on walls from the bottom up to ensure even application.

Brush or roll out run-off or excessive drips until they penetrate the wall.

Horizontal Surface

Apply in a saturating film until saturation is reached (on the verge of puddling). Brush or roll out puddles until penetration is complete.

EnviroSeal is safe to walk on while application takes place; however, surfaces may be slippery while wet.

Drying / Curing

The surface should be dry to the touch (and appear dry) within 1 to 3 hours. Ventilate the area to facilitate drying and curing. As EnviroSeal reacts and expands inside the concrete pores, it will purge any dirt, mineral deposits, or efflorescence to the surface. This is common in older concrete, and may last for several days. Purged material may be swept or washed off. Full cure will be reached in 60-90 days after application.

Cleanup

Flush equipment with warm water immediately after use.

Wipe off drips and overspray while still wet.

Removing dried residue from the surface may require mechanical abrasion.

In 2 to 3 hours after application, rinse the treated surface with water and scrub with a stiff bristle brush to remove any surface residue.

Storage

Store in a cool, dry place out of direct sunlight at temperatures below 100º F. Protect from freezing. If the sealer freezes, thaw and mix thoroughly before use.

Top Coats, Paints, Adhesives and Floor Coverings

When properly applied, EnviroSeal does not leave a film, making surfaces compatible for painting, sealing, tile adhesives, thinnest, levelers or patching compounds.

If EnviroSeal is not able to penetrate, is over-applied, or allowed to puddle, it will leave a hard, white film on the surface, to which paints, adhesives, or patching compounds will not adhere well. Acids or chemicals will not remove this film. It can only be removed mechanically by scraping, sanding or media blasting.

After applying EnviroSeal, wait at least 5 days before installing indoor/outdoor carpeting or painting the concrete with latex and other vapor-permeable paints. Wait at least 10 days before installing vinyl flooring tiles, linoleum, rubber padding, or painting the concrete with paints like epoxy or urethane.

EnviroSeal Resists Other Product including:

Acids: *Acetic acid <10%, Acid water pH<6.5, Boric acid, Carbolic, Carbonic, Chromic 5%, Formic 10% & 85%, Humic, Hydrochloric 10%, Phosphoric 10% & 85%, Tannic* ***Salts:*** *Bromide, sodium, Dichromate sodium, Potassium, Nitrate, Nitrite, Persulfate, Sulfite, sodium, Thiosulfate, sodium.* ***Solvents and Alcohols:*** *Carbon tetrachloride, Ethyl alcohol, Methyl alcohol, t-Butyl alcohol, Trichloroethylene, Acetone, Carbon disulfide, Glycerin, Ethylene glycol.* ***Petroleum Oils:*** *Light oil above 35 Baume.* ***Coal Tar Distillates Vegetable Oils Fats and Fatty Acids. Miscellaneous:*** *Cold ashes, Buttermilk, Chlorine gas, Cider, Coal, Coke, Corn syrup, Fermenting fruits, vegetables or extracts, Formaldehyde, Hydrogen sulfide, Iodine, Lignite oils, Manure. Mine water, waste, Molasses, Nickel plating solutions, Ores, Sauerkraut, Sea water, Sugar, Sulfite liquor, Sulfur dioxide, Tanning bark, Tanning liquor, Water (soft <75 ppm carbonate), Wine*

APPLICATIONS ASSISTANCE

For additional information about EnviroSeal for concrete sealing, at 844-610-4967 or send an email to info@EnviroguardDirect.com

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