Product Application Guide

Creto DPS (Deep Penetrating Sealer)

Product Description

The many benefits of applying **Creto DPS (Deep Penetrating Sealer)** are permanent.

Creto DPS is not a surface sealer. Creto DPS effectively starts working as a sealer about 2 to 3 mm **below the surface**.
However, Creto DPS is much more than just a sealer.

Creto DPS contains a proprietary catalyst which causes a chain reaction to start:

It allows DPS to penetrate below the surface of the concrete or alkali bearing substrate where it "pursues moisture" down through the substrate.
Upon contact with the "free" alkali (lime) and calcium hydroxides (in that moisture) it reacts instantly to form a silica gel membrane on the (moist) surfaces of all the voids and particulate, (sand, aggregate and cement) immediately waterproofing the substrate.
Over time, this silica gel membrane hydrates and hardens into a solid, yet, breathing, glass impregnated mass which provides a permanent seal and moisture barrier, as well as increased surface hardness/dusting resistance and compressive and flexural strengths.

For a more detailed, comprehensive explanation of the many unique benefits of using Creto DPS, please refer to the Creto DPS Technical Reports, 1 through10, included in this Creto Product Specification PS-50.

Advantages

Water based, totally non-toxic, environmentally and ecologically friendly
A one time application and **permanent** solution
Waterproofs (holding a hydrostatic head)
Retards penetration of grease, oils, and acids
Densifies, **hardens, strengthens**, and greatly extends life of concrete treated
Reduces or eliminates wear due to abrasion, freeze-thaw and salt attack
Reduces or eliminates bacteria growth

"Stabilizes" concrete substrate
Reduces or eliminates sweating
Enables easier ice and snow removal
Increases bonding of any top coating 300%
"Cures" new concrete uniformly

Uses

On all alkali bearing substrate, I.e. Concrete, Shotcrete, Stucco, Mortar, etc.,
As a pre-treatment prior to patching or overlay with Creto RMO (Repair Mortar & Overlay),
As a surface hardening and waterproofing treatment for RMO patch or overlay

Surface Preparation - Old Concrete

Surfaces to be treated must be free of any cracks or defects greater than 1.5 mm. /.059 inch, and cleaned of any and all materials; laitance, efflorescence, dirt, dust, grease, grime, etc., down to the bare concrete or substrate.

Greasy, oily, or acidic conditions, will require appropriate cleaning in advance of, and prior to the application of Creto DPS.
Scrubbing with a floor buffer and stripping pads, chemicals, acids, high pressure hot water, or other means may required to get down to bare substrate.

To test readiness sprinkle water on the surface, if water drops bead up and are not readily absorbed by the concrete, the surface is (still) coated or contaminated by an organic compound which must be removed.

Once down to the bare substrate, Creto Deep Clean can be used as a final degreaser. In extreme cases, several cycles of Deep Clean applications, each followed by a thorough flushing with clean water, may be required to flush all such foreign matter to the surface.

Note: While oil, for example, will be removed, stains from used motor oil may not.

Once clean, the surface need not be dry prior to the application of Creto DPS, but, ensure no puddles or any visible water on the surface. If so, remove excess water with mop, etc.

Old, but previously untreated concrete still needs to be cleaned down to the bare concrete prior to application of DPS.
Follow the usual site preparation and surface readiness testing procedures, as required.

Surface Preparation - New Concrete

Curing - Creto DPS applied as a curing treatment slows down the concrete curing time while speeding up the setting time. The result is the reduction or elimination of hot spots and the hairline cracking and surface checking due to spot drying.

To achieve these "curing" benefits, apply the DPS within 24 hours of starting the pour, but, no sooner than when the concrete has set, the surface sheen has disappeared, and the concrete can be walked on without leaving any marks.

Appropriate coverage rates when applying DPS for this purpose can vary from approximately 64 to 84 sq ft/gal, if applied as soon as you can walk on it without leaving tracks, to 120 to 160 sq ft/gal if you apply the DPS towards the end of the allowable 24 hours after the start of the pour.
Pro-rate coverage and application rates accordingly, depending on when DPS is applied during this period.

Application Equipment

Brush, Mop, Roller,
Low Pressure (max. 20-30 psi) Sprayer

Mixing

Creto DPS is pre-mixed at the factory, but, **shake it well before using it**, this agitation will ensure the maximum effectiveness.

The particular viscosity of DPS has been developed to allow the applicator to successfully complete most applications to most substrate, in the shortest possible application time, usually with one coat.

Do not dilute or mix Creto DPS with water or any other liquid. Use only as supplied.

However, there are occasional exceptions:

- You might have an application to a substrate at the extreme edge of the low porosity/high surface tension scale, I.e. some power trowelled floors, some second and third coat DPS applications.
- You might have surface temperatures high enough to cause evapouration of the water in the DPS before the DPS can all penetrate.

In such low porosity/absorption or high surface temperature situations, DPS diluted with potable water, 1:1 to 1:2, may better serve the purpose.

Note: Even if diluted on occasion for such an application, ensure DPS is applied as usual, with as many coats as necessary, until the concrete or substrate successfully passes the "sponge test" as described below in this Spec.

Predetermine the Coverage Rate

It is always recommended to predetermine coverage rates; How many coats? How much material? How long will the application process take, etc.
Conduct a small scale test in an out-of-the-way corner of the area to be treated following the application instructions below.

The "A, B, C's" of Applying DPS

A. Application Procedures for Low Moisture Content and Low Hydrostatic Pressure:

Surface Conditions: DPS can be applied to dry surfaces, but, is best applied to damp surfaces**.** Ensure there is no standing or running water on the surface to be treated.

Be aware of surface temperature. If the concrete or substrate is too warm, (I.e. warm to the touch), evapouration will reduce the amount of DPS available to penetrate through the slab.
To ensure a minimum of product lost to evaporation, pre-wet or soak the area to be treated with water, spread out or mop up any puddles, and proceed with the DPS application when the surface has dried to the "damp" stage.

Application: Apply DPS liberally (at minimum the predetermined coverage rate) and saturate all areas. Each spray swath should over lap the previous one by half it's width.
To ensure saturation, check areas 15 to 20 minutes after application because porosity will vary (over the area being treated) and some areas will appear to be drying faster.
The recommended procedure is; as soon as the entire area has been covered, go back and go over those areas that are most absorbent and drying fastest, again, at the same speed or rate of spraying.

Do not leave puddles of DPS. Use a mop or squeegee to remove any puddles.

Applying water over a DPS application will push the DPS deeper.
It is recommended the water be applied no sooner than when the surface treated with the DPS is no longer wet, but, not yet dry. I.e. Damp.

Testing for number of coats of DPS required & Multiple Coat Applications Procedures:

Sixteen (16) to 24 hours after the first DPS application the surface should be thoroughly flushed with clean water, to remove any alkali or contaminants the DPS pushes to the surface.

Allow surface to dry.

To determine whether a second application of DPS is necessary; Tape down several pieces of ordinary, dry sponge or foam rubber, to the slab. Leave for 24 hours, then remove. If, the slab beneath them or the sponge itself, is wet, the slab requires another application of DPS.

The DPS for this second application should be applied to saturation again, checking for areas of varying porosity, but, not leaving any puddles. Wait 16 to 24 hours.

Any alkali or leaching which occurs after the second treatment must be flushed off and the slab cleaned thoroughly (and allowed to dry) prior to a re-testing with sponges (if required) to determine the need for any further application of DPS.

Note: Steps or areas which have been salted over many years, is a good example of a substrate with an extraordinary contaminant content. In such cases the process of flushing (after applying DPS) to ensure all salts, alkali or contaminants have been pushed to the surface and removed, could involve cycles of daily flushing and drying for 3 to 7 days before no further contaminant appears after drying.

Once the rinsing is no longer flushing anything to the surface, and no further application of DPS is required, the treated and flushed surface should be allowed to thoroughly dry for a minimum 24 hours prior to the application of any secondary coatings.

On vertical, formed surfaces; Apply DPS as soon as the forms have been stripped and the surface rubbed, (if required). Apply from the bottom up, going
over the area twice to ensure saturation. One such application (to saturation) will usually be sufficient for most requirements.

Back-filling foundations may take place 12 hours after application.
Foot traffic is permissible in most cases within 3 hours or when surface appears dry.

On overhead surfaces, DPS is best applied with a sprayer using multiple light applications as required.

The first application should wet the surface. Do not

saturate as dripping will occur.

minutes, then “dust” surface with dry Portland powder and then apply a third coat of DPS.

B. <u>Application over RMO Patch or Overlay</u>:

Follow the same surface preparation and DPS application steps and procedures as in “A” above.

RMO has a specific and unique absorbency.
To ensure adequate saturation, always assume a minimum coverage rate of 200 sq ft/gal for DPS applications over RMO patch or overlay.

Creto DPS will not, because of the polymers in RMO, penetrate as deep into cured RMO as it would into a non-polymerized, alkaline substrate, but, it will increase surface hardness, dust-proofing, water-proofing performance and the bonding of any subsequent coatings applied to the RMO surface.

C. <u>Application Procedures for High to Extreme Moisture Content or Hydrostatic Pressure Situations</u>: I.e. Wall or substrate is either wet or water is visibly seeping through crack/hole**.**

1. Crack is less than 3mm. /1/10 in.In width, and water is weeping:
   a) Thoroughly wet surface area with DPS, and immediately after wetting with DPS, dry Portland powder should be hand rubbed (using latex gloves) into the cracks.
   b) Wet treated surface again with DPS, wait 10 minutes, “dust” surface with dry Portland powder again, then apply a third coat of DPS.
2. Crack (or hole) is greater than 3mm./ 1/10 in. in width And water is flowing at less than 1 gallon per hour:
   a) Thoroughly wet area, cracks and/or holes with DPS.
   b) Fill cracks and/or holes with moist mixture of Portland based patching cement, (1 part water to 3-4 parts sand mix, or equivalent) using 1 part water and I part DPS to achieve normal consistency of cement. This mixture should remain workable for 15 minutes.
   c) If necessary, push the mixture into the cracks or holes by hand, (using latex gloves),
   d) After the mixture is in the crack/hole smooth the surface, first with trowel, then with a soft paint brush dampened with water.
   e) Wet treated surface again with DPS, wait 10 minutes, then “dust” surface with dry Portland powder and then apply a third coat of DPS.
   f) Wait 20 minutes, then “dust” surface with dry Portland powder and then apply a fourth coat of DPS.
3. Crack or hole is greater than 3mm/ 1/10 in. and water is flowing at greater than 1 gallon per hour:

Repeat the 6 steps, a) through f) above, except an epoxy coated wire screen may be inserted between applications of the patching mixture.

For very heavy flow rates, be sure the water/DPS to cement ratio is not greater than 50% (1:1), and not less than 32% (1:2).
While, generally, the lower the water/cement ratio, the greater the strength of the concrete, in order to completely fill the crack/hole as far down as possible, sometimes a slightly wetter mix is required.

Coverage Rates

Every substrate to be treated will have a different and specific absorbency, and each will vary from spot to spot on the wall/slab/etc. Because of this, it is essential, prior to the application, to carry out a small scale test on part of the area to be treated, in order to predetermine as best as possible, the coverage rate specific to the particular substrate to be treated in each case**.**

Coverage rates with DPS range from a maximum of up to 280 sq ft/gal down to 40sq ft/gal or less.

Coverage rates are directly proportionate to the porosity and moisture content of the surface being treated and will get lower as the substrate being treated with DPS gets more porous or as the moisture content increases. Examples of coverage:

Fully cured, concrete floors float finished with a high surface tension and low moisture content can be up to 275 sq. feets per gallon.
Substrates overlaid with Creto RMO or concrete newly stripped of its forms, will be approx. 210 sq. feet per gallon, or less.
Used for the added curing benefits, or type C.

(above) extreme repair applications, because of the high water content coverage can range from 170 sq. feet per gallon down to 40 sq. feet per gallon, or less.

Packaging

20 liter pails/US 5 gal pails
208 liter drums/US 55 gal drums

Limitations

Creto DPS should never be applied if the surface temperature is below or going to drop below freezing, (0^0 C./32^0 F.)

Caution - Please Note:

1. **Do not apply DPS to any non-alkali bearing material**, or glass, glazed surfaces, or aluminum, as etching will occur. Use protective coverings to ensure no over-spray contact or wind carried contact. In case of accidental contact, rinse thoroughly and immediately with water.

2. **DPS is not meant to fill or seal cracks**. Refer to Creto RMO Product and Systems Specifications for Crack Repair procedures.

3. **DPS does not stain proof**. While DPS will not allow penetration of any material below the top 2 to 3 mm of the surface treated (coated), contaminants can penetrate and staining occur in that top 2 to 3 mm.

4. For surfaces not specified in our literature or if you are uncertain as to previous chemical treatments, (to the surface you are considering applying DPS to), we recommend that DPS be applied to a small test area first.

5. If Creto DPS becomes frozen, thaw out completely and shake well to fully remix the material prior to using. Freezing will not harm the product.

Disclaimer

Creto Engineered Solutions, and Creto Int., Inc., believe this information to be true to the best of our knowledge and our products are of the highest quality and uniform within manufacturing tolerances. Since no control is exercised over product use, no warranty, expressed or implied, is made as to the suitability of products for a particular use or as to the effect of such use, and no liability is assumed, directly or indirectly.

Buyers and users are always encouraged to conduct their own tests prior to application.