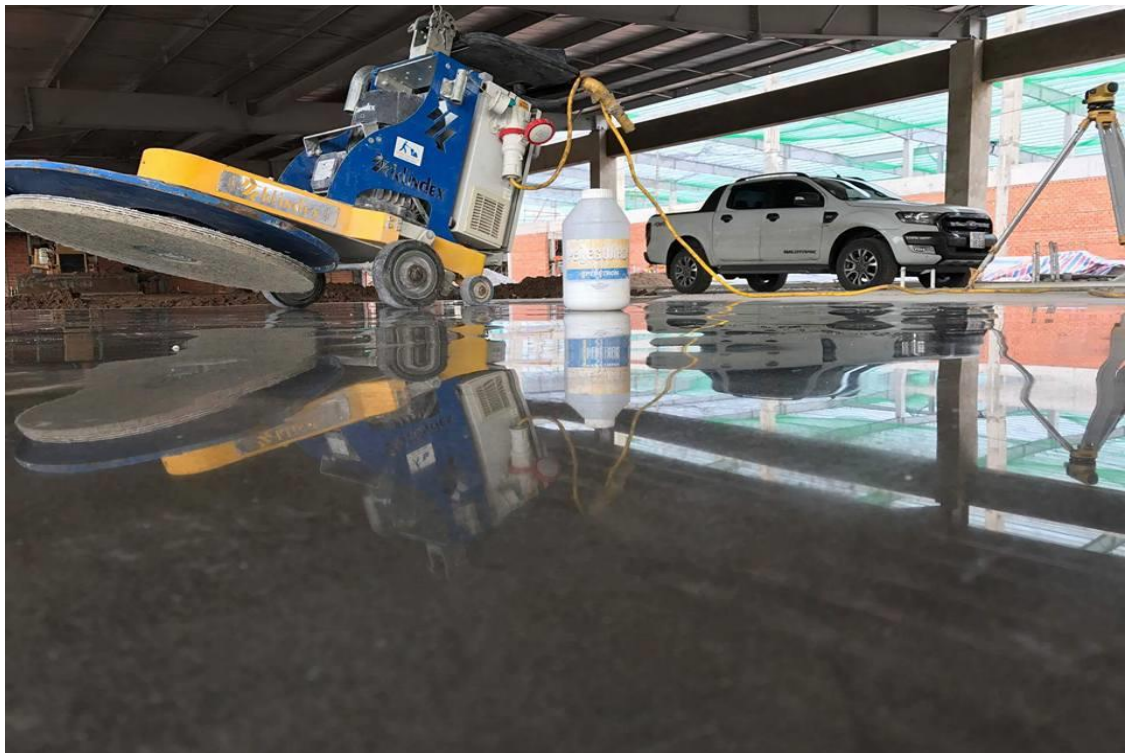


APPLICATION PROCEDURE FOR CONCRETE SURFACE HARDENING, POLISHING AND SEALING PROCESS BY PENETRON® PRODUCT SYSTEM

PENETRON®
TOTAL CONCRETE PROTECTION



T O T A L C O N C R E T E P R O T E C T I O N

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**PENETRON LIQUID HARDENER AND PROTECTIVE BURNISHING
TREATMENT APPLICATION SYSTEM**

The purpose of this document is to give general guidance about the use of Penetron system, in various applications and it will be referred as such.

1. Product Description

1.1 PENESEAL FH™

PENESEAL FH™ is a clear, reactive penetrating sealer for concrete and masonry building materials designed to permanently protect, preserve and strengthen them. PENESEAL FH™ penetrates deep into concrete and reacts with the elemental concrete ingredients to solidify them into a harder, denser, stronger concrete mass. Alkali salts and minerals are flushed out in the process, eliminating efflorescence and leaching and increasing bonding of surface coatings.

1.2 PENEGUARD™

PENEGUARD™ is a ready-to-use specially formulated copolymer that enhances standard and hardened concrete surfaces and cementitious overlays by forming a sealed protective finish resistant to water and stains. PENEGUARD™ provides a high gloss aesthetic finish, eliminating the need for floor waxing, polymer-based coatings, liquid polishes and constant maintenance. PENEGUARD™ produces a high sheen when used over polished and burnished concrete.

2. Surface Preparation

All materials should be stored at 40-100°F (4-38°C) 24 hours prior to installation. Surfaces to be treated should have an open pored surface so that when PENESEAL™ is applied can be absorbed. Remove all coatings, form oils, curing or sealing agents through chemical or mechanical means. Remove dust, dirt, laitance or any other contaminants by sweeping all areas to be treated with a fine bristle broom or scrub brush. Hose off with water and let dry. Remove any standing or puddled water to avoid dilution of PENESEAL™ FH before it is able to penetrate the surface.

3. Mixing

3.1 PENESEAL FH™

PRIOR TO USE, agitate bucket or drum and thoroughly mix Peneseal™ FH with clean water in equal parts by volume.



3.2 PENEGUARD™

Agitate jug or pail before using.

4. Application

4.1 PENESEAL FH™

Spray or pour followed by brooming or squeegeeing to saturate the surface. Tools: Low-pressure sprayer, soft bristle broom, squeegee, and water hose.



4.1.1. For New Concrete:

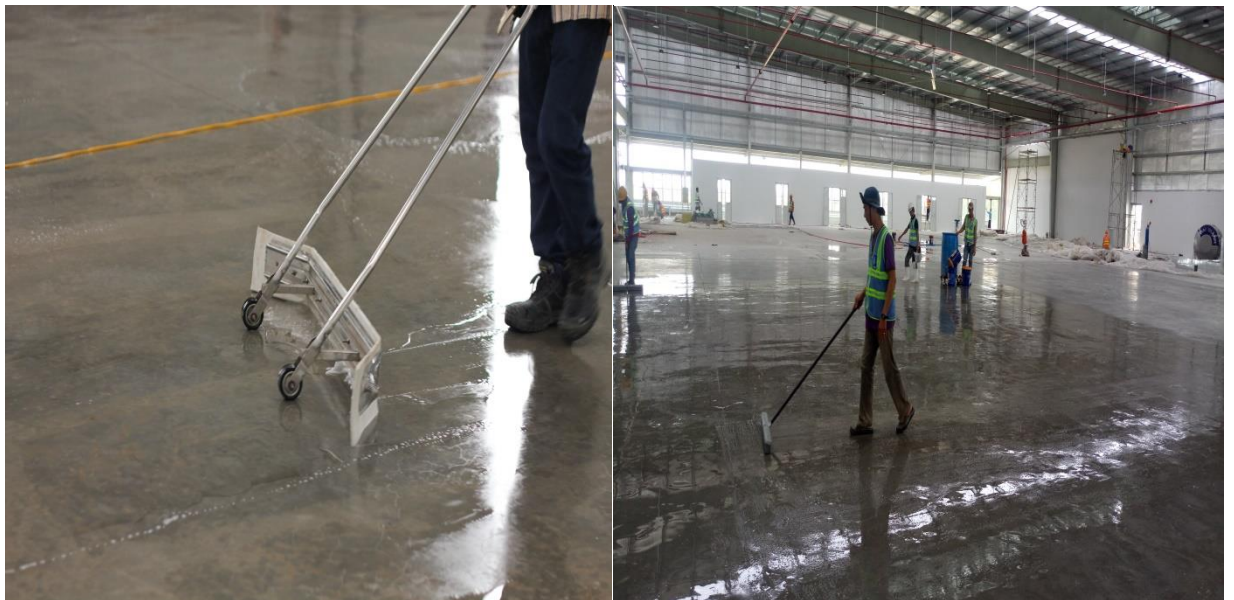
Step 1: Apply PENESEAL FH™ immediately following the concrete finishing and as soon as the concrete surface is firm enough to walk on and before hairline or temperature cracking begins. Keep the entire surface wet with PENESEAL FH™ for 30 minutes, working it into the surface with a soft-bristled broom.



Step 2: As PENESEAL FH™ becomes slippery underfoot, lightly mist the surface with water. This will keep the material in solution providing maximum penetration. Do not allow PENESEAL FH™ to dry on the surface.



Step 3: As PENESEAL FH™ again becomes slippery underfoot, thoroughly flush the entire surface with water and squeegee the surface completely dry to remove all surface alkali or PENESEAL FH™ residue. On exterior broom finished surfaces, no flushing is required, but any remaining PENESEAL FH™ must be squeegeed or broomed from the surface after 30-40 minutes. Do not allow PENESEAL FH™ to dry on the surface.



4.1.2 For Old Concrete (All Cured Surfaces):

Step 1: Saturate the surface with PENESEAL FH™ so that the entire surface is wet for 30 minutes. Mist with water if necessary to keep from drying on the surface.

Step 2 (Option 1): If after 30-40 minutes the majority of PENESEAL FH™ has been absorbed into the surface, broom or squeegee any excess material from all low spots and

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puddles so that all remaining PENESEAL FH™ is totally removed from the surface. Porous surfaces may require an additional application of PENESEAL FH™ to achieve maximum protection.

Step 2 (Option 2): If after 30-40 minutes the majority of PENESEAL FH™ is still on the surface, wait until it becomes slippery underfoot, then thoroughly flush the entire surface with clean water and squeegee completely dry to remove all PENESEAL FH™ residue.

General Application Notes:

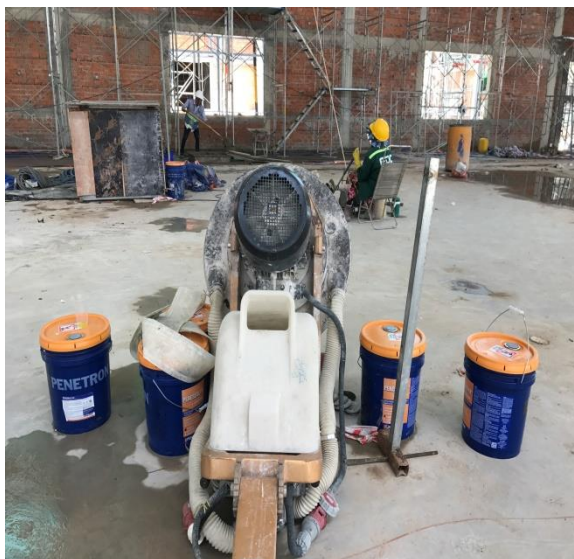
Application Temperature Limits: 40°F to 100°F (4°C to 38°C). The reaction of PENESEAL FH™ will be slowed at low temperatures. In these cases, the concrete should be protected from freezing for six days.

Drying Time: 1-3 hours. The surface can be used as soon as the application is complete and the surface is dry to the touch.

Number of Applications Required: Typically only one application is required. An additional application may be required on porous substrates to achieve maximum performance.

5. Application steps for Polishing and sealing concrete surfaces treated with Peneseal FH (All Cured Surfaces)

As with any other specialized technique, polishing is a multi-step process requiring use of the proper tools and equipment to achieve top-quality results. Note that each job will present different conditions and challenges, so consult PENETRON VIETNAM Technical Department for recommendations and additional support on your project.



Applications steps

- Prepare the substrate according to paragraph 2.1 guidelines using suitable tools and equipment.
- Seal cracks and joints (contraction and expansion) with suitable products.
- Grind with a 100-grit metal-bonded diamond (or finer, if desired).
- Apply PENESEAL FH™ to densify the concrete.
- Polish with a 100- or 200-grit resin-bond diamond, or a combination of the two.
- Polish with a 400-grit resin-bond diamond.
- Polish with an 800-grit resin-bond diamond.

- Finish with a 1500- 2000- or 3000-grit resin-bond diamond (depending on the desired sheen level).



Optional: Apply PENEGUARD™ to help protect the polished surface and make it easier to maintain.

PENEGUARD™ application steps

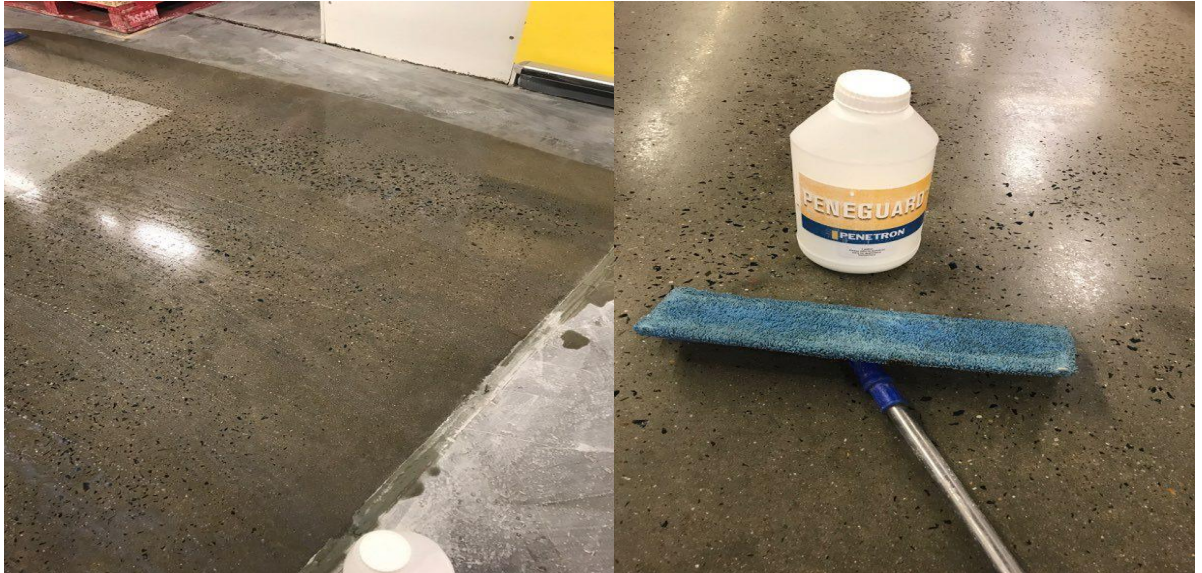
For achieving the best results PENEGUARD™ may be applied to steel-troweled, hardened and highly polished (multi-step grinding and polishing system) concrete surfaces that previously has been treated with PENESEAL FH™, with the following application steps:

Step 1. Before the application of PENEGUARD™, lightly wet a clean microfiber cloth.

Step 2. Using a low-pressure sprayer, spray a very thin mist spray within the designed application area.



Step 3. Using the damp microfiber cloth and firm downward pressure, immediately spread the PENEGUARD™ (evenly, without increasing the thickness) to produce an even wet coating. Spread the product as far as possible while maintaining a wet edge. When properly applied, PENEGUARD™ dries quickly. Stop spreading once drying begins. Avoid overlapping.



Step 4. Allow material to dry (approximately 30-60 minutes).

Step 5. Using a high-speed burnisher (1,500 rpm), burnish the surface evenly until desired gloss and finish are achieved. Surface temperatures immediately behind the burnisher should be 90°F (32°C) or higher to allow PENEGUARD™ to fuse and bond to the substrate.



Step 6. For maximum gloss number reading, PENEGUARD™ may be reapplied (maximum 3 coats) by repeating the above steps 1 thru 5.



6. Special Considerations

6.1 PENESEAL FH™

- Do not use PENESEAL FH™ on extremely porous masonry, such as lightweight block.
- Do not apply PENESEAL FH™ to frozen or freezing surfaces or when temperature falls below 40°F (4°C) or if temperatures will drop below freezing during the curing period (approximately 24 hours).
- Prevent PENESEAL FH™ from getting on glazed and finished surfaces such as glass, aluminum, etc. In case of contact, flush immediately with water.
- Protect surfaces from equipment leaks or other leaks, such as oil, hydraulic fluid, etc.
- PENESEAL FH™ treated surfaces can become slippery during application. Exercise caution and wear appropriate footwear and protective clothing.

Time Requirement for Curing, Sealing and Hardening: 60-90 days. PENESEAL FH™ seals concrete from within by permanently locking the pores, thus making the concrete itself the penetration barrier. This process is essentially complete within 90 days, but may continue at a much slower rate up to one year.

Color: Clear. PENESEAL FH™ will not change the natural appearance of the masonry or concrete. During application, all treated surfaces must be flushed clean with clean water to prevent impurities from drying on the surface.

Sheen: On smooth steel-troweled concrete surfaces a natural wax-like sheen will appear between 6 and 12 months after treatment. This sheen is caused by the hardening and sealing effects of the PENESEAL FH™, as well as the natural “buffing” action of foot traffic, cleaning and everyday use of the floor. The sheen is a permanent part of the concrete surface and will last the lifetime of the surface with proper maintenance.

Painting or Covering Preparation: On old concrete – allow 3-7 days before applying paint or coverings to PENESEAL FH™ treated surfaces. On new concrete – allow 30 days for proper curing of the concrete.

Duration of Effectiveness: PENESEAL FH™ is permanent. The concrete durability and appearance improves with age.

6. Safe handling Information

PENETRON® materials contains cement which is alkaline. Will irritate eyes and skin and may cause skin sensitization. Wear appropriate eye, skin and breathing protection when using this product.

Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. For further information please refer to Material Safety Data Sheet. **KEEP OUT OF REACH OF CHILDREN.**

***Notes :** Users should always refer to the most recent edition of the product's data sheet, which will be provided upon request. Please contact the Penetron Technical Department for further application information before use.*

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