

## DESCRIPTION

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.

## RECOMMENDED FOR

- ▶ Any cementitious based substrate such as, but not limited to: concrete, terrazzo, heavyweight concrete block, plaster, stucco or mortar
- ▶ Warehouses
- ▶ Hangars
- ▶ Distribution and storage facilities
- ▶ Food processing plants
- ▶ Manufacturing facilities
- ▶ Any type of facility with exposed concrete flooring.

## ADVANTAGES

**Curing:** PENESEAL FH™ allows concrete to cure uniformly through its chemical and moisture retention reaction. This aids in a more complete hydration process and reduces hairline and temperature cracking.

**Sealing:** PENESEAL FH™ penetrates deep into the concrete, which allows its chemical reaction to lock the pores from within, providing an integral and permanent seal.

**Hardening:** PENESEAL FH™ binds the elemental parts of the concrete, solidifying them into a denser, tougher, harder mass. This results in a more durable concrete with higher surface abrasion resistance and compressive strength.

**Dustproofing:** PENESEAL FH™ densifies the surface of the concrete through its chemical bonding and flushing of the weaker concrete salts and minerals. This permanently seals the surface and eliminates surface dusting.

**Protection from Efflorescence and Leaching:** PENESEAL FH™ penetrates deeply into concrete neutralizing the alkali salts and minerals that cause efflorescence and salt leaching. These weakening salts and minerals are forced to the surface and flushed away during the application process.

**Improved Bonding:** PENESEAL FH™ eliminates the alkali salts and minerals that weaken and delaminate surface coatings. PENESEAL FH™ leaves the concrete surface free of these salts and minerals, which improves bonding of any type of covering.

**Non-Toxic:** PENESEAL FH™ is non-toxic and is not harmful to lungs or hands. Complies with all VOC and USDA regulations.

### DIRECTIONS FOR USE

**Mixing: PRIOR TO USE,** mix PENESEAL FH™ (1:1 Concentrate) with clean water in equal parts.

**Application Methods:** Spray or pour followed by brooming or squeegeeing to saturate the surface.

**Tools:** Low-pressure sprayer, soft bristle broom, squeegee, and water hose.

**Surface Preparation:** Surfaces to be treated should have an open pored surface so that PENESEAL FH™ 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.

#### 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.

#### 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 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.

**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.

**Clean Up:** Clean all equipment with water only. Do not use thinners.

## MAINTENANCE

**Floors:** Wash or wet mop with neutral or high pH detergent. Detergents must not contain caustic soda, sulfates or hydroxides. Acids and acidic cleaners will dull the surface sheen and/or etch the surface.

**Walls:** Flush with clean water.

## SPECIAL CONSIDERATIONS

- ▶ 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.

## PACKAGING

Available in 5-gallon (19 L) pails, 55-gallon (208 L) drums and 275-gallon (1041 L) containers.

## COVERAGE

Approximately 200 sq ft per gallon (5 m<sup>2</sup>/L) of diluted concentrate. Coverage can vary depending on the temperature and porosity of the concrete.

#### STORAGE / SHELF LIFE

Two years when stored in sealed drums. Agitate bucket or drum before using. Keep pails closed and avoid exposure to heat and direct sunlight. DO NOT ALLOW TO FREEZE!

#### SAFE HANDLING INFORMATION

The use of rubber gloves, goggles and other appropriate protective gear during mixing and application is recommended. Avoid contact with eyes. In case of eye contact, rinse immediately with plenty of water and seek medical advice. If taken internally, do not induce vomiting. Drink large amounts of water or milk and seek medical attention immediately.

#### TECHNICAL DATA

##### Applicable Standards:

**Abrasion:** ASTM C 779 – 80.9% increase in abrasion resistance.

**Bonding:** ASTM D 3359 – 60% increase in epoxy adhesion. 50% increase in polyurethane adhesion.

**Curing:** 61% greater moisture retention during the initial critical 24 hour curing period as compared to untreated samples.

**Hardening:** ASTM C 39 – 40% increase in compressive strength 7 days; 38% increase at 28 days over untreated samples. ASTM C 805 (Schmidt hammer) – 16.1% increase in impact resistance.

**Permeability:** 98.5% reduction in permeability at 100 psi.

**Weathering:** ASTM G 238 I – ultra-violet light and water spray exposure had no adverse effect on PENESEAL FH™ treated samples.



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PENESEAL FH

Impregnation for protection and repair of concrete structures  
[Protection against penetration Class 1.2 (I) and  
Increasing of physical resistance Class 5.2 (I)]

Abrasion resistance:  $\geq 30\%$  improvement

Capillary water absorption: Class II

Impact strength: Class III ( $\geq 20$  Nm)

Bond strength by pull-off:  $\geq 0,8$  N/mm<sup>2</sup>

Penetration depth:  $\geq 5$  mm

#### WARRANTY

PENETRON INTERNATIONAL, LTD. warrants that the products manufactured by it shall be free from material defects and will conform to formulation standards and contain all components in their proper proportion. Should any of the products be proven defective, the liability to PENETRON INTERNATIONAL, LTD. shall be limited to replacement of the material proven to be defective and shall in no case be liable otherwise or for incidental or consequential damages. **PENETRON INTERNATIONAL, LTD. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED.** User shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.

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