PENESEAL™ FH (Concentrate)

Version, Penetron Hellas 26.01.2023

INTEGRAL PROTECTION & INDUSTRIAL FLOOR HARDENING (MIXING RATIO 1:1) / FRESH CONCRETE CURING AGENT (MIXING RATIO 1:2 OR 1:3)

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 and airport facilities
- Roadworks, concrete decks
- 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 (indicative dilution 1:3).
- *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 (Indicative dilution 1:1).
- *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 (indicative dilution 1:1 or 1:2).
- *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 (indicative dilution 1:1 or 1:2).
- *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 (indicative dilution 1:1).
- *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 (indicative dilution 1:1).
- *Non-Toxic:* PENESEAL™ FH is non-toxic and is not harmful to lungs or hands. Complies with all VOC and USDA regulations.

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TECHNICAL CHARACTERISTICS

Characteristic	Test Result	Test Method
Abrasion	80,9% increase in abrasion resistance	ASTM C 779
Bonding	60% increase in epoxy adhesion. 50% increase in polyurethane adhesion	ASTM D 3359
Curing (dilution 1:1)	61% greater moisture retention during the initial critical 24 hour curing period as compared to untreated samples	ASTM C 309 ASTM C 156
Curing (dilution 1:3)	39,3% greater moisture retention after 72 hours (wood float finish method) 31,8% greater moisture retention after 72 hours (steel float finish method)	
Hardening	40% increase in compressive strength 7 days 38% increase at 28 days over untreated samples	ASTM C 39
	16,1% increase in impact resistance (Schmidt hammer)	ASTM C 805
Permeability	Approximately 98% reduction in permeability at 100 psi	
Weathering	Ultra-violet light and water spray exposure had no adverse effect on PENESEAL™ FH treated samples	ASTM G 23

Test results obtained under controlled laboratory conditions at 23°C (73°F) and 50% relative humidity unless otherwise specified. Reasonable variations can be expected due to atmospheric and job site conditions. General soundness of the concrete substrate (porosity, strength, absorption, etc) as well ambient conditions, as already noted, may yield varying results.

DIRECTIONS FOR USE

1.Use for Integral Protection and Industrial Floor Hardener

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 contaminates 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.

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

Application: Application methods involve spray or pour followed by brooming or squeegeeing to saturate the surface.

For New Concrete: 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. 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. 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): 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. 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. On the other hand, 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.

2. Use as Fresh Concrete Curing Agent

Mixing: PRIOR TO USE, agitate bucket or drum of PENESEAL™ FH. Then mix PENESEAL™ FH with clean water in a ratio of 1:2 or 1:3 by volume (1 part PENESEAL™ FH to 2 or 3 parts clean water) - depending on the project requirements (for high temperature or strong wind a mixing ratio of 1 :2 is recommended). The final specific gravity of the mixture is 1.1 kg/L (9.179 lb/gal).

Application: Apply PENESEAL™ FH by spray as soon as finishing work of the concrete surface is completed.

Application Notes:

Application temperature limits are 4 ºC to 38 ºC (40 ºF to 100 ºF). 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 is 1-3 hours. The surface can be used as soon as the application is complete and the surface is dry to the touch.

Typically, only one application is required. An additional application may be required on porous substrates to achieve maximum performance.

The time requirement for curing, sealing and hardening is approx. 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.

The color of the product is 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.

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.

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.

PENESEAL™ FH is permanent. The concrete durability and appearance improve with age.

Clean all equipment with water only. Do not use thinners.

Application tools required are low-pressure sprayer, soft bristle broom, squeegee, and water hose.

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.

COVERAGE

Approximately 4-5 m^2/L (160-200 ft^2/gal) of diluted concentrate. Coverage can vary depending on the temperature and porosity of the concrete.

As a curing agent for fresh concrete the coverage is 0.15 – 0.20 Kg/m^2 (0.03 – 0.04 lb/ft^2) (for mixing ratio 1:2 or 1:3).

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 4 ºC (40 ºF) or if temperatures will drop below freezing during the curing period (approximately 24 hours).

Avoid the application of PENESEAL™ FH by spraying in conditions of strong wind or during heatwaves.

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.

PENESEAL™ FH is not a vapor barrier.

Apply to colored concrete only after the slab is fully cured.

Contact PENETRON HELLAS S.A. for additional information, regarding your project.

PACKAGING

PENESEAL™ FH is available in 4 Kg (9 lb), 19-L (5-gallon) pails, 208-L (55-gallon) drums and 1041-L (275-gallon) containers.

STORAGE / SHELF LIFE

Storage life is 24 months from the date of manufacture, when unopened, undamaged original container is properly stored in a cool and dry place, unexposed to moisture and sunlight. Always tightly reseal container after use. DO NOT ALLOW TO FREEZE!

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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. For further information please refer to Safety Data Sheet. PENETRON HELLAS S.A. has recently updated Safety Data Sheet on the safe use of PENETRON® products. Each Safety Data Sheet contains health and safety information for the protection of your employees and your customers.

WARRANTY - DISCLAIMER

PENETRON HELLAS S.A. warrants that its products are manufactured under certified ISO Standard procedures, are of excellent quality and shall be free from material defects and contain all components in their proper proportion. Should any of the products be proven defective, the liability to PENETRON HELLAS S.A. shall be limited to replacement of the material proven to be defective, since the standard application procedures have been met and the suitability of the product for the particular application have been proven. PENETRON HELLAS S.A. makes no warranty as to merchantability of fitness for a particular purpose. User, after contacting the distributor of the product, shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith. While every care has been taken, the information provided in this product's data sheet make no part of any contract. All recommendations, technical data and test data contained in this product's data sheet are based upon the results of control laboratory tests or in actual field tests. However, PENETRON HELLAS S.A. makes no warranty of any kind, concerning this data. In any case, this data is given in good faith based in the PENETRON HELLAS S.A. experience, till the publication of this sheet. Due to variance in storage, handling and applications of the materials, PENETRON HELLAS S.A. accepts no liability for the results obtained. It is suggested that potential users try small applications to determine the suitability of each individual product for their specific requirements. The users should always refer to the most recent edition of the product's data sheet. PENETRON HELLAS S.A. may particularly differentiate its versions of the product's data sheet compared with those of PENETRON INTERNATIONAL LTD or respective PENETRON companies worldwide. These changes are due to text formatting, different application weathering and procedures or different product names and aim at the optimal consumer information.

CERTIFICATION

As a curing agent for fresh concrete, PENESEAL™ FH has been tested in independent laboratory according to ASTM C 156 following the specifications described in ASTM C 309.

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1085-CPR-0080
DOP NO: 10.00010D121217-01
EN 1504-2
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: ≥ 30 % improvement
Capillary water absorption: Class II
Impact strength: Class III (≥ 20 Nm)
Bond strength by pull-off: ≥ 0.8 N/mm^2
Penetration depth: ≥ 5 mm
Reaction to fire: NPD
Dangerous substances: NPD

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