



PENETRON[®]
TOTAL CONCRETE PROTECTION

PENESEAL FH

Making Concrete Harder, Denser & Stronger

A single application lasts for the life of the concrete

PENESEAL™ FH: A clear sealer for life-long protection

A clear, reactive penetrating sealer, PENESEAL FH permanently seals and strengthens concrete and masonry building materials from within. By penetrating into the surface and reacting with the elemental concrete ingredients, the concrete becomes a harder, denser, stronger mass that is solid and not porous.

Alkali salts and minerals are flushed out in the process, eliminating efflorescence and leaching, and increasing bonding of surface coatings. This process is essentially complete within 90 days, but may continue at slower rates for up to one year.

When subjected to abrasion resistance testing, PENESEAL FH-treated concrete shows up to 80% increased resistance to wear. By creating a traffic-resistant and self-polishing floor surface, PENESEAL FH improves floor appearance with increased use.



Pittwater Road Residential Parking Garage
Manly, Australia

The floor of this multi-level parking garage was treated with PENESEAL FH sealer for a non-toxic, hardened, dustproof concrete surface. A wax-like sheen appeared several months after application; it is permanent and a result of buffing action from foot & car traffic and cleaning.

The PENESEAL FH advantages:

- **Enhanced, uniform curing:** controls hairline, early shrinkage and temperature cracking on concrete; stabilizes the surface and effectively reduces crazing.
- **Life-long protection:** PENESEAL FH penetrates into the concrete surface to actively lock the pores; provides all concrete surfaces with a deep, permanent seal that's easy to clean and maintain.
- **Improves hardness & impact resistance:** strength and durability of concrete are enhanced and protected from damage and deterioration; abrasion and impact resistance are substantially increased.
- **Chemical resistance:** a single coat repels most surface contaminants, including organic acids, alkali salts, oils and greases.
- **Eliminates dust:** PENESEAL FH chemically reacts with the salts in the concrete to harden the surface and greatly reduce wear and the release of concrete dust.
- **Smooth surface finishing:** smooth steel-troweled surfaces develop a permanent marble-like finish and sheen about six to twelve months after treatment. This sheen will last the lifetime of the surface with proper maintenance.
- **Bonding:** PENESEAL FH eliminates the surface salts detrimental to proper bonding; the resulting concrete is an ideal surface for paints, caulking compounds, adhesives and floor coverings.

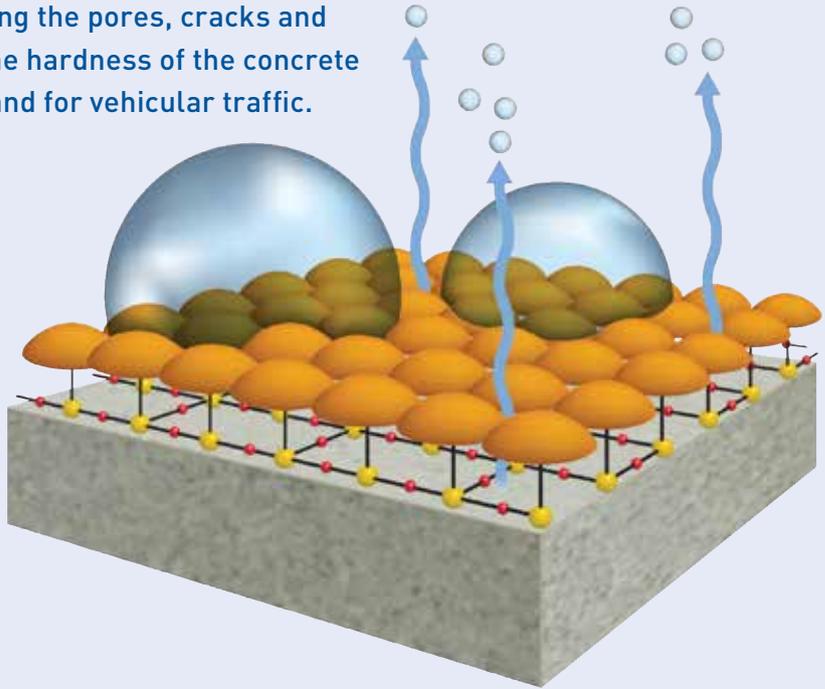
PENESEAL FH transforms porous concrete into a solid mass

How it works

PENESEAL FH seals cement-based materials and concrete by penetrating the substrate and closing the pores, cracks and voids from within. This increases the hardness of the concrete surface for better wear underfoot and for vehicular traffic.

Molecular structure

As a type of silicate compound, PENESEAL FH makes any concrete surface denser and harder. The typically small molecules of the silicate densifier can migrate into the substrate. It reacts with calcium carbonate in the concrete to create a molecular structure in the pores of the concrete surface – calcium silicate. The resulting structure in the concrete pores increases the strength of the surface. The molecular structure makes it highly alkali-resistant and well-suited for concrete substrates.



The resulting denser mass is solid, colorless, odorless, non-toxic (no VOCs) and non-flammable. Water, chemicals and other contaminants can no longer penetrate into the concrete.

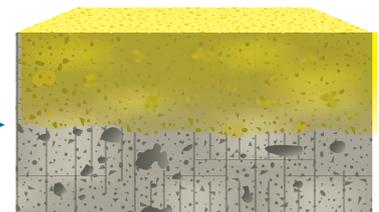
Six to twelve months after application, PENESEAL FH develops a shiny, marble-like surface that lasts for the lifetime of the concrete. No further applications are needed. The concrete surface can be cleaned with just soap and water.

Permanently sealing the concrete



Before treatment

Pores and capillaries in untreated concrete are subject to penetration by moisture, oils, acids, etc. and allow the release of concrete dust.



After treatment

PENESEAL FH penetrates into the concrete surface where it reacts with the free lime and alkali to form a solid and denser mass. This locks the pores and capillaries in the concrete, permanently sealing the concrete.

PENESEAL FH lowers the cost of maintaining a concrete surface

Apivita Natural Cosmetics

Metamorfossi, Greece

A Greek producer of "green," natural-based cosmetics, used PENESEAL FH instead of epoxy technologies due to its sustainable corporate guidelines. The application included 4,000 m² (43,055 ft²) of floor area at the company headquarters.



Brodie Street Basement Car Park

Little Bay, NSW, Australia

The basement parking garage under a new 33-unit apartment complex used PENESEAL FH to treat 6,000 m² (64,580 ft²) of smooth concrete surface to ensure a non-toxic, sealed, hardened, dustproof concrete floor surface that improves with age.

ALDI Hypermarket Parking Garage

Salonica, Greece

ALDI, a European supermarket chain, constructed a 2,500 m² (26,910 ft²) parking garage. PENESEAL FH was selected over epoxy coatings due to its cost-effectiveness and durability. Post-installation polishing further enhanced the results.

Putawy Wastewater Treatment Plant

Putawy (Lublin), Poland

A large expansion of the plant included renovation of the sewage tanks, clarifiers, channels, and other concrete components. PENESEAL FH concrete sealer was used to harden and increase abrasion resistance of the facility's new concrete roads.



Permanently seals and hardens new and old concrete



Getting the application right

Preparing the surface

To remove surface dust, dirt and contaminants, sweep all areas to be treated with a fine bristle broom or scrub brush. Hose off with water and let dry. Remove all oil and form release compound residues from areas where forms have recently been detached. PENESEAL FH can be applied to damp surfaces as long as the puddled areas are swept away so the PENESEAL FH is not diluted before penetrating the surface.

How to apply

Pour or use a low pressure sprayer, then spread with a soft bristle broom or squeegee to saturate the surface. Then hose off with water.

Only one application of PENESEAL FH is required for a permanent seal that hardens the concrete and renders it denser. The sealer completely cures, seals and hardens the concrete in 60 – 90 days.

Once applied and cured, PENESEAL FH can be coated with any type of covering when standard surface preparation guidelines are followed. The product does not contain silicone.

Packaging and coverage

- 19 liter / 5 gallon pail
- 208 liter / 55 gallon drum
- 1,041 liter / 275 gallon container

Depending on the temperature and porosity of the concrete, estimate coverage (of diluted concentrate) at about 5 m² per liter (200 ft² per gallon).



King Sebatha Stadium

Mthatha, South Africa

Built for the 2010 FIFA World Cup, the stadium was designed to be as maintenance-free as possible. PENESEAL FH sealer was used in high traffic areas to harden and strengthen the concrete floors.

Use PENESEAL FH on:

- Concrete
- Heavyweight concrete block
- Mortar
- Plaster
- Stucco
- Terrazzo
- Exposed aggregate
- Any sand aggregate, cement combination

Applying PENESEAL FH ...to new concrete

step 1

Apply PENESEAL FH at approximately 5 m² per liter (200 ft² per gallon) immediately following the finishing operation and once the surface is firm enough to walk on before hairline and temperature cracking begin. Keep the entire surface wet with PENESEAL FH for 30 minutes. Do not allow PENESEAL FH to dry.

step 2

As PENESEAL FH becomes slippery underfoot, lightly mist the surface with water. This will cause the material to lose its slipperiness and keep it in solution, providing maximum penetration.

step 3

As PENESEAL FH again becomes slippery and gel-like 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 swept from the surface after 30 – 40 minutes.



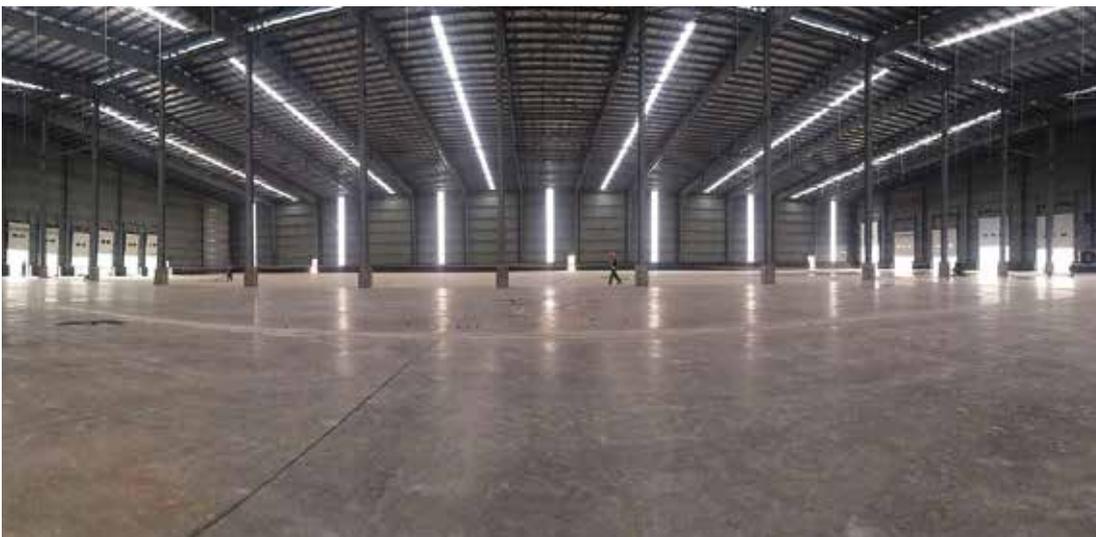
PENESEAL FH sealer goes on with just a single coating, reducing floor maintenance and repair costs.

PENESEAL FH provides an ideal surface for paints, caulking compounds,

Solog Logistics Center

Bien Hoa (Dong Nai), Vietnam

A logistics company specializing in container shipping added 40,000 m² (430,560 ft²) of storage capacity. PENESEAL FH sealer was used to treat the concrete floors to withstand industrial-level traffic.



...and on cured and old concrete

step 1

Saturate the surface with PENESEAL FH until the entire surface is wet for 30 minutes.

step 2

Option 1

After 30 – 40 minutes, if most of the PENESEAL FH has been absorbed, sweep or squeegee any excess material from all low spots and puddles so all remaining PENESEAL FH is entirely absorbed by the concrete or removed from the surface.

Option 2

After 30 – 40 minutes, if most of the PENESEAL FH is still on the surface, wait until it becomes slippery underfoot, then thoroughly flush the surface with clear water and squeegee completely dry to remove all PENESEAL FH residue.

Final application guidelines:

- Apply only with a low pressure sprayer. Do not use airless sprayer. Avoid inhalation.
- Use rubber gloves, suitable protective clothing and chemical goggles. Wash after handling.
- Apply to colored concrete only after the slab is fully cured.

Do not apply PENESEAL FH in the following cases:

- To seal lightweight block or other extremely porous masonry that contains actual holes and air pockets
- When temperature falls below 4°C (40°F)
- To areas previously treated with curing or sealing agents, unless these coatings have been removed by chemical or mechanical means

adhesives and floor coverings.



Sydney Adventist Hospital Parking Garage

Wahroonga (NSW), Australia
The 900-car parking facility at the hospital was treated with Penetron technology to ensure a very durable concrete structure. PENESEAL FH was applied to over 20,000 m² (215,278 ft²) of the garage to protect and harden the concrete surfaces.

PENESEAL FH

Total Concrete Protection

FoodXchange

Woodlands, Singapore

A seven-floor, 72,000 m² (744,000 ft²) food manufacturing and warehousing facility has over two dozen tenants. PENESEAL FH was used to seal all the floors of this high traffic building.



Our **PENESEAL liquid sealers** are designed to permanently protect, preserve and strengthen concrete. PENESEAL FH sealer has been proven effective in countless major projects worldwide.

With locations in all key markets, including facilities in Asia, Europe, North America, Middle East and South America, Penetron develops and manufactures high quality products for a wide range of applications. Penetron products and technical support are available through a comprehensive network of distributors.



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