PENETRON®
SPECIALTY PRODUCTS

RENEW® WS

HIGH-PERFORMANCE, CEMENT-BASED, SELF-LEVELING WEAR SURFACE

DESCRIPTION

RENEW® WS is a premium, fast-setting, Calcium Aluminate, polymer modified, cement-based, interior, self-leveling topping that is used as a restorative wear surface over distressed, worn or damaged, structurally sound concrete. Available in gray, white and ultra white.

APPLICATIONS

- Manufacturing and storage facilities
- Warehouse and distribution centers
- Distressed and worn concrete floors
- Rain damaged slabs
- Public utility structures
- Airport hangars and terminals
- Showrooms and convention centers
- Polished and decorative flooring

NOTE: It is the responsibility of the installer/applicator to ensure the suitability of the product for its intended use.

ADVANTAGES

- Suitable for use on all residential, commercial, and institutional applications
- Ideal for barrel mixing or pumping applications
- Can be installed from 1/4"-2" (6-51 mm) neat and up to 5" (12.7 cm) when extended with aggregate
- Maintains healing and pour merging properties for over 15 minutes
- Fast return to service; walkable in just 3-4 hours
- Suitable for staining and polishing
- Accepts resinous coatings and toppings
- Will not contribute to the growth of mold or mildew
- No dangerous emissions or irritating fumes
- Environmentally friendly. May be LEED eligible, visit www.penetronsp.com for LEED contributions document
- Lower alkali binder system creates an alkali barrier system from the underlying concrete when installed at ≥1/4" (6 mm) thick. This protects organic adhesives and coatings from alkali decomposition and secondary VOC emissions up to 90% RH (water of convenience)

TECHNICAL DATA

Compressive strength (ASTM C109):

1 day	2800 psi (19.3 MPa)
7 day	4300 psi (29.7 MPa)
28 day	6000 psi (41.4 MPa)

Flexural strength (ASTM C348):

28 days	950-1000 psi (6.6-6.9 MPa)

Flammability (ASTM E84):

Flame spread	-0-
Fuel contribution	-0-
Smoke development	-0-

Approximate coverage (Yield) per 50-lb (22.7-kg) bag:

1/4" (6 mm)	23 ft² (2.1 m²)
3/8" (10 mm)	17.25 ft² (1.6 m²)
1/2" (13 mm)	11.5 ft² (1.1 m²)

Installed weight:

1/4" (6 mm)	2.6 lb/ft² (12.7 kg/m²)

Application temperature range:

50-95°F (10-35°C)

NOTE: Above 85°F (29°C), use ACI Hot Weather Application Guidelines.

Set (ASTM C191; 70°F (21°C), 50% RH):

Flow time	15 minutes
Final set	40 minutes

Color:

Gray, white or ultra white

Cure time @ 73°F (23°C):

Accepts floor covering, polishing, resinous coating/toppings or light traffic in 24 hours.

NOTE: Cooler temperatures, inadequate ventilation and higher humidity can extend drying times. All data derived from tests under laboratory conditions; field conditions may yield slightly different results

SHELF LIFE / STORAGE

12 months from the date of manufacture, when unopened bags are properly stored in a cool, dry place, unexposed to moisture and sunlight.

PACKAGING

50-lb (22.7-kg) bags; 2000-lb (907-kg) super sacks

QUALITY CONTROL: The Fail-Safe System

Due to the many variables that can affect consistency and flow in all leveling products, it is recommended that the Penetron Specialty Products Fail-Safe system be incorporated when mixing the RENEW® WS.

Please obtain a Fail-Safe kit from Penetron Specialty Products Technical Support prior to mixing. The Fail-Safe flow test procedure can be viewed on the Penetron Specialty Products website: www.penetronsp.com in the Technical & Video Resources section.

- → To ensure proper consistency and performance, the flow of the material using the Fail-Safe ring should never exceed 11" (28 cm).
- → As a baseline, mix a 2-bag batch. For each bag, start with 4 qt (3.8 l) of water per bag, holding 0.5 qt (0.47 l)/bag in reserve.
- → Mix to a smooth lump free consistency and check flow with the Fail-Safe ring. If more flow is desired, slowly add reserve water until the desired flow is achieved, never to exceed 11" (28 cm) of flow or the water to exceed 4.5 qt (4.3 l) per bag.
- → Determine the water required to get the desired flow and monitor batches using the Fail-Safe method, making adjustments as necessary to achieve the desired flow, not to exceed 11" (28 cm).
- → For pumping installations, the mixed material at the end of the hose should produce the same result as the baseline test.

DIRECTIONS FOR USE

RENEW® WS is not a vapor barrier. Penetron Specialty Products recommends testing per ASTM F1869 for Moisture Vapor Emission Rate (MVER) and ASTM F2170 for RH. If the substrate exceeds 8 lb (3.6 kg) MVER or 95% RH, or the readings exceed those of a coating, adhesive or flooring manufacturer's product that will be applied (whichever is stricter), use VB 225™ prior to installation.

Surface preparation:

All surfaces: Using foam tape or caulking, isolate at all perimeters and sharp corners such as column bases, pedestals, supports etc. Surfaces must be clean, sound, dry, minimum 50°F (10°C) and free of oil, gypsum compounds, wax, grease, sealers, coatings, curing compounds, urethane, paint, asphalt, loose surface material or any contaminant that will act as a bond breaker. Never use acid or mastic removers on any surface to which a Penetron Specialty Products flooring product will be applied. Honor all existing expansion joints, control joints and moving cracks. Failure to do so could result in delamination or cracking of the RENEW® WS.

Concrete: Weak surfaces must be cleaned to solid sound concrete by mechanical means, such as chipping, shot-blasting, grinding or scarifying; remove all dust prior to priming. Reference the International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) standards of #3 to #4 for acceptable profile height.

Non-porous: Substrate must be sound and fully bonded. Shot-blast ceramic and quarry tile substrates. Grind or shot-blast terrazzo and epoxy coatings; remove all dust prior to priming. Reference the International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) standards of #3 to #4 for acceptable profile height.

Contact Penetron Specialty Products Technical Support for specific recommendations when installing RENEW® WS on substrates not listed.

Priming:

All surfaces: Allow primer to dry for a minimum of 1 hour and a maximum of 24 hours.

Concrete: Dilute PRIMER STX 50™ or PRIMER STX 100™ 1:1 with clean water and apply evenly using a clean push broom. Apply a thin coat and work into the surface; leave no bare spots or puddles. Broom out puddles that may form while primer is drying (minimum 1 hour, maximum 24 hours). On very porous concrete, do an initial primer application diluted 3:1 water to PRIMER STX 50™ or PRIMER STX 100™ in the same manner. Allow to dry before applying a second coat at 1:1.

Non-porous: Apply 1 coat of undiluted PRIMER STX 100™ using a 3/8" nap roller. Apply a thin film; leave no puddles or bare spots. Allow PRIMER STX 100™ to dry.

1:1:1 priming option: Mix equal parts by volume of PRIMER STX100™, water and RENEW® WS. While continuously mixing to maintain a homogenous consistency, pour onto substrate and brush (open bristle push broom) out as thin as possible, leaving no thick build-ups.

For coverage rates and additional priming details, refer to the PRIMER STX 50™ or PRIMER STX 100™ Product Data Sheets. RENEW® WS must be applied within 24 hours of priming to ensure a good bond is achieved between primer and substrate.

Primer for polishing: Penetron Specialty Products recommends that you use an epoxy priming system with sand broadcast when polishing the RENEW® WS. The epoxy bonds tenaciously to the properly prepared surface and helps minimize surface cracking. When using this system, the substrate does not require additional priming; the sand broadcast is your primer.

NOTE: This epoxy priming system is not a vapor barrier. Penetron Specialty Products recommends testing per ASTM F1869 for Moisture Vapor Emission Rate (MVER) and ASTM F2170 for RH. If the substrate exceeds the readings of the epoxy coating manufacturer's product that will be applied, use VB 225™ prior to installing the epoxy sand broadcast.

- Substrates must be structurally sound, completely clean, dry, solid, and dimensionally stable
- Mechanically prepare, shot-blast, the concrete substrate to obtain an ICRI CSP 3 to 4
- Non-porous substrates, such as epoxy coatings, ceramic tile and quarry tile, should be well-bonded and should always be mechanically cleaned and roughened. A bond test is recommended
- Use a two component, 100% solids epoxy coating, such as VB 225™. Mix per the epoxy manufacturer's recommendations, usually by pouring Part A (resin) into a suitable mixing pail and then adding Part B (hardener). Mix thoroughly for 3 minutes using a low-speed drill with a jiffy (paint) style mixing paddle. Do not allow the epoxy to remain in the mixing pail; a large mass will generate heat and prematurely harden
- Apply a smooth, even 8-10 mil coating over the prepped substrate using a squeegee, followed by a 3/8" nap roller; use a nylon paintbrush for hard to reach areas and along walls
- While the epoxy is still wet, immediately broadcast the sand to refusal. Use only clean, oven-dried sand that has a uniform mesh size from 20 to 35 and is free of fines. Usually 2/3 -1 lb (10.7-16 oz.) of sand per square foot is required
- After the epoxy has fully cured, usually overnight, remove all loose sand by sweeping and vacuuming
- Check for any bare spots and reapply to those areas
- Install the RENEW® WS topping over the cured epoxy sand broadcast at a minimum depth of 3/8" (10 mm)
- Depending on the conditions of the job site, the topping can be polished in 1-3 days

Mixing:

Concrete and non-porous: Mix 2-bag batches of RENEW® WS. For each bag, add between 4 qt (3.8 l) to a maximum 4.5 qt (4.3 l) of clean water into a mixing barrel. Then, add bags of RENEW® WS while mixing at full speed with an egg-beater type mixing paddle attached to a heavy duty 1/2" drill (minimum 650 rpm). Mix for 2 minutes or until lump free. Add NO additional water and keep the mixing paddle immersed in the material to avoid entraining excess air.

Refer to the QUALITY CONTROL: The Fail-Safe System section (on top of Page 2) for proper consistency, flow and water addition limits. The amount of water used is dependent on the maximum flow of 11" (28 cm).

Installation:

Prior to starting the installation, close all doors and windows; protect work area from direct sunlight. These variables can cause uneven curing patterns. It is also recommended to set up a mixing station where all product mixing takes place. Dusting usually occurs in the mixing area and could have a negative effect on the product's bond to the substrate. Limiting the areas where mixing occurs will help keep the floor clean and contaminant free.

Barrel mixing: Pour the blended RENEW® WS on the floor immediately and disperse with a gauge rake, followed by finishing with a flat blade smoother. Plastic athletic type cleats should be worn when using the smoother to avoid leaving marks. RENEW® WS will maintain its workability and healing properties for up to 15 minutes.

Pumping: RENEW® WS can be mechanically mixed using either an in-line continuous mixer and pump or a batch mixer. Most important is calibrating and adjusting the pumps water to powder ratio. The FAIL-SAFE flow test is critical when pumping and should be utilized periodically throughout the pour to ensure proper mixing. The minimum required hose length is 100 ft (31 m) for in-line mixers.

NOTE: For horizontal applications, greater than 300 ft (91.4 m) and vertical applications greater than 40 ft (12.2 m), contact Penetron Specialty Products Technical Support.

Prior to starting, make sure the mixer and pump are completely clean and in good working order. Refer to the manufacturer's instructions for specific maintenance and cleaning.

Prior to installation, adjust the pump to ensure proper mixing and a uniform distribution of material is achieved throughout the mix. Do not overwater, as this will lower the strength, create dusting and may cause cracking.

To avoid segregation and overwatering during installation, the water settings may periodically require adjusting. Check the product consistency to ensure a uniform distribution of material during the pumping process.

On the end of the hose, attach a mesh-screen sock to trap any foreign or unmixed material. Always test the pump using the actual maximum hose length and conditions before installation to ensure proper application and appearance is achieved.

NOTE: The conditions that can affect the overall performance are, but not limited to, length of hose, water temperature, water pressure, substrate, ambient air temperature and powder temperature.

Deep placements and large projects: Can be efficiently installed with the use of a pump. As the material is pumped on the floor, follow the "Barrel Mixing" procedures for placement.

Contact Penetron Specialty Products Technical Support for additional instructions, recommended pumping procedures and approved equipment.

Extension:

For installations 2"-5" (51 mm - 127 mm), RENEW® WS can be extended with 15 lb (6.8 kg) of clean, dry 3/8" (10 mm) pea gravel per 50 lb (22.7 kg) bag. If the aggregate is damp, less water will be required to prevent overwatering. The addition of aggregate can

decrease the workability and may require a minimum 1/4" (6 mm) finish coat to obtain a smooth finished surface. When applying a finish coat, allow the extended layer to dry, normally 12-16 hours and prime the surface with PRIMER STX 50™ or PRIMER STX 100™ mixed 1:1 with clean water. Allow the primer to cure, usually 1-3 hours, then install the RENEW® WS.

Barrel mixing: Mix the RENEW® WS with the proper amount of water into a lump free consistency. Next, add 15 lb (6.8 kg) of aggregate per 50 lb (22.7 kg) bag of RENEW® WS, mixing until the aggregate is fully encapsulated, then pour on the properly primed floor.

Pumping: Preplace the aggregate at 15 lb (6.8 kg) per 50 lb (22.7 kg) bag of RENEW® WS to be installed. Pour on the properly primed floor, using a rake to work the premixed RENEW® WS into the aggregate until fully encapsulated.

Contact Penetron Specialty Products Technical Support for additional information and or view the installation videos, which can be found on the Penetron Specialty Products website: www.penetronsp.com

Curing:

RENEW® WS is self-curing. Do not use damp curing methods or curing and sealing compounds. Protect from excessive heat, cold, direct sunlight and forced air movement conditions during its initial curing stage and for the first 24 hours. These variables can cause uneven curing patterns, a false set, and cracking.

APPLICATION TOOLS

Mixing barrel, mixing paddle (egg-beater type), gauge rake spreader, flat blade smoother, cleats and 1/2" heavy duty drill (min. 650 rpm). Penetron Specialty Products has mixing kits and Fail-Safe kits available for purchase.

CLEAN UP

Clean all tools and equipment with water immediately after use, prior to material hardening.

SPECIAL CONSIDERATIONS

- → Penetron Specialty Products recommends installing a test area, ensuring suitability of RENEW® WS for intended use
- → Substrate must have a minimum direct tensile bond test reading of 150 psi (1 MPa), per ASTM C1583-04
- → Do not install over gypsum underlayment. Contact Penetron Specialty Products Technical Support for specific recommendations over gypsum underlayments
- → This product is ready to use with the addition of water. DO NOT add any materials or additives to mixture other than those described above

JOB MOCKUPS

Penetron Specialty Products recommends that when our products are used in any application or as part of any system that includes other manufacturers' products, the installer and/or design professional shall test all the system components collectively for compatibility, performance and long-term intended use in accordance with pertinent and accepted industry standards prior to any installation. Written documentation of the tests performed shall be satisfactory to the design professional and installer. Test results must include the means and methods of application, products used, project specific conditions being addressed, and standardized tests performed for each proposed system or variation.

SAFE HANDLING INFORMATION

Before using this product, review the RENEW® WS Safety Data Sheet (SDS) that can be found on the Penetron Specialty Products website: www.penetronsp.com. Avoid contact with eyes and wear suitable protective eye wear. Avoid prolonged or repeated contact with skin. Wear gloves and suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear respiratory equipment. For additional information regarding first aid and emergency procedures, refer to the product Safety Data Sheet (SDS).

Waste disposal:

This product, when discarded or disposed of, is not listed as a hazardous waste in federal regulations. Dispose in a landfill in accordance with local regulations.

KEEP OUT OF REACH OF CHILDREN

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