SWELLPRUFE® Data Sheet

Bentonite & Rubberized Asphalt Sheet for Below-Grade Protection

Product Description

GCP SWELLPRUFE®Waterproofing Membrane bonds directly to poured concrete and shotcrete. It expands significantly toward the ground, resisting water infiltration at the source and preventing water ingress into the structure. This also prevents lateral migration between the SWELLPRUFE®membrane and the concrete structure.

SWELLPRUFE®combines the self-sealing properties of bentonite with specially formulated rubberized asphalt sheets that bond to concrete. When exposed to moisture, the membrane swells significantly compared to its dry volume, filling gaps and defects.

The membrane fully and continuously adheres to poured concrete without requiring confinement. Overlaps are easily formed and can be mechanically fastened; these seals hydrate under confinement to stop water ingress when encountering water. Alternatively, hot-welded overlaps provide a watertight seal without confinement, ensuring a continuous bond to the poured concrete.

SWELLPRUFE®is designed for shotcrete walls and cast-in-place concrete, making it ideal for typical foundation applications. For demanding applications with significant hydrostatic pressure, GCP recommends PREPRUFE® 300R/160R Plus membranes. For high-risk shotcrete foundations, the PREPRUFE®SCS Plus blindside system is recommended for superior performance.

Product Advantages

- Innovative design and strategically placed bentonite make SWELLPRUFE® trafficable and safe to work upon when wet.
- Features a specially formulated delayed swelling mechanism that mitigates premature exposure to rain and moisture.
- Bentonite encapsulation makes SWELLPRUFE® resilient to freeze/thaw and wet/dry cycles preventing loss (wash off) of bentonite particles.
- Fully bonds to concrete to prevent lateral water migration between the pre-applied membrane and structure, and remains stable under slabs and blind side walls
- Higher coverage and lower weight per roll enable ease of handling and application
- Easy to cut and install with kick-out roll design, saving time during application.
- Visual guides for mechanical fixing (over the black color of the SWELLPRUFE® surface) and overlap lay lines ensure quality assurance for overlaps.

System Components

Membrane

- SWELLPRUFE® Membrane - heavy-duty approx. 135 mil composite sheet designed for horizontal and vertical use.

Ancillary Components

- PERM-A-BARRIER® Universal Flashing & Sealant - sealant for penetration, corners & damage repairs
- BITUTHENE® Liquid Membrane – detailing liquid membrane for piles and under Bituthene sheet over cant strip for post applied application
- PREPRUFE® Liquid Flashing – fully bonded to poured concrete detailing solution if needed by project design
- ADCOR® - hydrophilic waterstop for joints in concrete walls and floors and for enhanced protection of penetrations
- SWELLSEAL® Single component gun-grade hydrophilic waterstop.

Installation

Substrate Preparation

All surfaces: It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth, with no gaps or voids greater than 0.5 in. (12 mm). Grout should be applied as needed around all penetrations, such as utility conduits, for stability.

Horizontal: Suitable horizontal substrate can be but not limited to compacted gravels (not more than ¾"), compacted soil, mud slab, protection slab. The substrate must be free of loose aggregate and sharp protrusions. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical: Suitable substrates include but is not limited to drainage, timber lagging, sheet piles, concrete, and prepared shotcrete. Use concrete, plywood, insulation, or other approved facing over sheet piling to provide support. Board systems such as timber lagging must be close-butted and not more than 0.5 in. (12 mm) out of alignment. HYDRODUCT®220 drainage sheet can be used to bridge voids, gaps, and misalignments up to 2 in. (50 mm) prior to SWELLPRUFE®installation.

Membrane Application

Follow SWELLPRUFE®standard detail drawings. For questions reach out to GCP Technical Services.

SWELLPRUFE®has yellow double lines evenly spaced lengthwise along the roll to distinguish the concrete pour-facing side from the swellable backside. Mechanical overlap fastening can be done with approved fasteners, staples, or nails.

Optional: Hot air welding can be used to seal the overlap.

Horizontal substrates

- Apply SWELLPRUFE® membrane on approved substrates. Roll out the membrane, ensuring the yellow lines face the concrete pour.
- Overlap succeeding sheets by at least 4 in. (100 mm) along the side, aligning with the second printed layline, and 6" (in). (150 mm) along end laps. Secure the membrane using approved fasteners spaced a maximum of 6" (in). (150 mm) apart.

Vertical substrates (Blind-side)

- SWELLPRUFE® membranes are suitable for vertical application on permanent formwork or adjacent structures. Secure the membrane vertically with approved fasteners appropriate for the substrate, ensuring the yellow overlap lines face the concrete pour. The membrane can be installed in any convenient length. Wooden or mechanically attached terminations sealed with PERM-A-BARRIER® Universal Flashing & Sealant may be required to maintain the membrane's position

Roll ends and cut edges

- Overlap all roll ends and cut edges by a minimum of 6" (in). (150 mm). Stagger end laps to avoid thickness build-up. Mechanically attach using staples or pins (suitable fasteners) spaced 6" (in). (150 mm) apart. Vertical end laps should be water-shedding (shingled). Fasten through the overlap within ¾" (in). (18 mm) of the leading edge using an approved fastener so the membrane lays flat.

Side laps (4-inch marked selvedge)

- Mechanically attach using staples or pins (suitable fasteners) spaced 6" (in). (150 mm) apart. Fasten through the marked selvedge within ¾" (in). (18 mm) of the leading edge using an approved fastener so the membrane lays flat. Vertical end laps should be water-shedding (shingled).
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Vertical post-applied walls –

- SWELLPRUFE® membranes are suitable for vertical post-applied applications if needed, with the swellable side facing backfill. Secure the membrane vertically with approved fasteners appropriate for the post-applied concrete, not less than ½ in. in length, spaced a maximum of 12 in. apart for the overlap and in the center of the membrane, securing it tightly to the wall. Ensure the yellow overlap lines face the concrete. The membrane can be installed in any convenient length (width or length). Wooden or mechanically attached terminations sealed with PERM-A-BARRIER® Universal Flashing & Sealant may be required to maintain the membrane's position.

Protection for post-applied SWELLPRUFE®: It is recommended to protect the membrane from backfill operation within 30 days of membrane application. Suitable protection course can be HYDRODUCT 220 which also provides drainage performance.

Membrane Repair

- Inspect the membrane before installing reinforcement steel, formwork, and final placement of concrete.
- Repair small punctures and slices (0.25 in. / 6 mm or less) by applying PERM-A-BARRIER® Universal Flashing & Sealant centered over the damaged area, with a minimum 3" (in). spread to all sides.
- Repair punctures and holes larger than 0.25 in. (6 mm) by applying a patch of SWELLPRUFE® Membrane. Extend the patch 6 in. (150 mm) beyond the damaged area. Apply fasteners at 6 in. (150 mm) spacing within 3/4 in. (18 mm) of the leading edge using an approved fastener so the membrane lays flat. Avoid fish mouths at the overlaps; apply additional fasteners so the membrane lies flat at the seams.

Pouring of Concrete

- Environmental exposure during construction: Under most climatic conditions, concrete should be poured within 30 days of membrane installation. If the concrete pour is delayed beyond 30 days due to unforeseen circumstances, consult GCP Technical Services for guidance on replacing material or covering.
- Place and compact concrete carefully to avoid damaging the membrane. Never use sharp objects to consolidate the concrete.
- Remove ponding water from the membrane as soon as possible. Extended ponding is not allowed. If the membrane is fully submerged in water for more than 24 hours, consult GCP Technical Services for guidance on replacement or repair before the concrete pour.

Removal of Formwork

- A minimum concrete compressive strength of 3,000 psi (20 N/mm²) and 3–5 days of curing are required before stripping formwork supporting SWELLPRUFE® Membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete

Environmental Conditions

Temperature Requirements

- SWELLPRUFE® membrane can be applied at temperatures of 25°F and rising.

Precautions

- Users must read and understand the product label and Safety Data Sheets (SDSs) for each system component before use. Review all precaution statements on product labels and SDSs prior to working with the material. The most current SDSs are available at gcpat.com.

Limitations

- Approved uses include only those specifically detailed in this Product Data Sheet and other current Product Data Sheets available at gcpat.com.
- SWELLPRUFE® Membranes are not intended for any other use. Contact GCP Technical Services where any other use is anticipated or intended.
- SWELLPRUFE® Membranes are designed for in-service (throughout the building life) temperatures between -5°F (-20°C) and 120°F (49°C). SWELLPRUFE membrane remain unaffected during concrete curing, even when temperature temporarily exceed 120°F (49°C).
- SWELLPRUFE® Membranes should not be used with conventional two-sided formwork.
- SWELLPRUFE® membranes should be installed on an approved substrate, not in standing water or on ice.
- SWELLPRUFE® membranes are designed to function in groundwater with limited alkali salts and strong acids, with conductivity below 2,500 µS/cm. Submit water samples to the manufacturer for compatibility testing if unsure.

Storage & Handling

- Observe a one-year shelf life and use on a first-in, first-out basis.
- Store in dry conditions between 40°F (4.5°C) - 90°F (32°C)
- Store in unopened wrap in upright position, do not store directly under sun
- Store open rolls off ground under tarps or otherwise protected from rain and ground moisture

Supply

Dimensions (nominal)	SWELLPRUFE®
Roll Size	33 ft. 10 in. × 3 ft. 3 in. (110 sq. ft) 10.31 m × 0.99 m (9.3 sq. m)
Typical Roll Weight	Approx. 85 lb
Weight/sft	0.77 lb
Minimum side laps	4 in. (100 mm)
Minimum end laps/cut edges	6 in. (150 mm)

PHYSICAL PROPERTIES

Dimensions (nominal)	SWELLPRUFE®	Test Method
Color	Black	
Typical Thickness	135 mil	ASTM D3767
Volumetric expansion, day 1	>50%	ASTM D 5229 Unconfined
Volumetric expansion, day 3	>100%	ASTM D 5229 Unconfined
Ultimate Volumetric expansion	>500%	ASTM D 5229 Unconfined
Wet/Dry Cycle	Unaffected, >100% volumetric expansion	ASTM D 5229
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385[1]
Resistance to Hydrostatic Head	Pass at 231 ft (71 m)	ASTM D5385[2]
Resistance to Hydrostatic Head, Functional Details	Pass at 231 ft (71 m)	ASTM D5385[3]
Tensile Strength	400psi	ASTM D412
Grab Tensile Strength	Not applicable	
Elongation at break	50%	ASTM D412
Crack cycling at -9.4°F (-23°C), 1/8" Movement	Unaffected, Pass	ASTM C1305/ASTM C836

Puncture resistance	>150 lbs	ASTM E154
Puncture resistance	>70 lbs	ASTM D 4833
Peel adhesion to poured concrete	5 lb/in. (875 N/m)	ASTM D903
Low Temperature Flexibility	-10F	ASTM D1970
Water vapor transmission rate	<0.1 Perm	ASTM E 96

Footnotes

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water.

The test measures the resistance of lateral water migration between the concrete and the membrane.

2. Hydrostatic head tests of SWELLPRUFE ®membranes are performed by casting concrete against the membrane with a lap.

3. Test is performed by casting concrete against the membrane with detail prepared per GCP standard details.

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