# PREPRUFE® 200 Membrane

Fast, simple, pre-applied waterproofing membrane and vapor barrier that bonds to poured concrete for use below slabs or behind basement walls on confined sites

## Product Description

PREPRUFE®200 Membrane is a composite sheet comprised of a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.

Using patented Advanced Bond Technology, PREPRUFE®200 Membrane provides a continuous seal that resists water ingress and migration between the membrane and the structure.

The Preprufe®200 System includes—

- **PREPRUFE® 200 Membrane**—robust membrane for horizontal use below concrete slabs or vertically against soil retention systems.
- **PREPRUFE® CJ Tape LT**—self-adhesive 8 in. (200 mm) wide strip applied to the surface of the membrane along the line of all concrete joints (application temperature range 25°F to 86°F (-4°C to +30°C)).
- **PREPRUFE® CJ Tape HC**—as above for use in hot climates (minimum 50°F (10°C)).
- **BITUTHENE® Liquid Membrane**—for sealing around penetrations, etc.

PREPRUFE®200 Membrane is applied either horizontally to smooth prepared concrete, well-rolled and compacted sand, or compacted crushed stone blinding; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes.

The specially developed PREPRUFE®adhesive layers work together to form a continuous and integral seal to the poured concrete.

## Product Advantages

- Prevents water migration—PREPRUFE® 's Advanced Bond Technology™ forms a unique integral seal to concrete poured against it
- Fast and easy installation—loose laid, mechanically fastened laps
- Avoids delays—unaffected by wet or cold conditions, can even be laid during rain
- Excellent vapor barrier—typical MVER 0.11 lb/1000 $ft^2$/24 hr ASTM F1869-98
- Inherently waterproof, non-reactive system—
  - Cannot activate prematurely or be washed away
  - Not reliant on confining pressures or hydration
  - Unaffected by freeze/thaw, wet/dry cycling
- Chemical resistant—effective in all types of soils and waters, protects structure from salt or sulphate attack
- Self protecting—ready for immediate placement of reinforcing steel and concrete without costly protective layers

## Applications

Typical applications include garages, plant rooms, utility grade basements, tunnels; vapor barrier for ground bearing floor slabs with moisture sensitive finishes, e.g. schools, hospitals, wood flooring, etc.

For more critical waterproofing applications consider PREPRUFE®300R. See separate data sheet.

## Limitations

PREPRUFE®200 Membrane is intended for low, medium or intermittent water pressures.

PREPRUFE®200 Membrane can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use BITUTHENE®self-adhesive membrane or PROCOR®fluid applied membrane to walls after removal of formwork for a fully-bonded system to all structural surfaces.

## Use

PREPRUFE®200 Membrane is supplied in rolls 4 ft (1.2 m) wide, interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

## 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 around all penetrations such as utility conduits, etc. for stability.

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. An angular profiled blinding is recommended rather than a sloping or rounded substrate. The surface does not need to be dry but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

## Membrane Installation

PREPRUFE®200 Membrane can be applied at temperatures of 25°F (-4°C) or above. Membrane installation is unaffected by wet weather.

Horizontal substrates—Place the membrane HDPE film side to the substrate with printed coated side up facing towards the concrete pour. End laps should be staggered to avoid a build up of layers.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked lap line. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Lap fastening—To prevent the membrane from moving and gaps opening, the laps should be fastened together at maximum 39 in. (1.0 m) on-center. Fix through the center of the lap area using 0.5 in. (12 mm) long washer-head self-tapping screws, or similar, allowing the head of the screw to bed into the adhesive compound to self seal.

It is not necessary to fix the membrane to the substrate, only to itself. Ensure the membrane lays flat and no openings occur. Additional fastening may be required at corners, details etc.

Galvanized fasteners are suitable for most applications. Stainless steel or other non-corrosive fasteners are recommend for aggressive soil conditions containing chloride or sulphate.

Alternatively, 3 in. (75 mm) strips of PREPRUFE®Tape may be used 39 in. (1.0 m) on center to prevent gaps or movement. Or, PREPRUFE®Tape may be used to seal the entire length of the overlap. Apply tape centrally over lap and roll firmly. Remove plastic liner.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the printed coated side facing towards the concrete pour. The membrane may be installed in any convenient length. Secure the top of the membrane using a batten such as a termination bar or similar 2 in. (50 mm) below the top edge. Fastening should be made through the overlap area at 20 in. (0.5 m) maximum on-center so that the membrane lays flat without fishmouths. Immediately remove the plastic release liner.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and fasten as above.

## Penetrations

Use the following steps to seal around penetrations such as service pipes, piles, lightning conductors, etc.

Grout around the penetration if the penetration is not stable. Fit the membrane tight to the penetration. If the membrane is not within 0.5 in. (12 mm) of the penetration, apply PREPRUFE®Tape to cover the gap.

Wrap the penetration with PREPRUFE®Tape by positioning the tape 0.5 in. (12 mm) above the membrane.

Apply BITUTHENE®Liquid Membrane around the penetrations using a fillet to provide a watertight seal between the PREPRUFE®membrane and PREPRUFE®Tape.

## Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing with water if necessary.

Repair damage by placing a patch of PREPRUFE®200 Membrane over the damaged area ensuring a minimum 3 in. (75 mm) overlap. Secure the patch using screw fasteners as above.

Any areas of damaged adhesive should be covered with PREPRUFE®Tape. Remove printed plastic liner from tape.

## Pouring of Concrete

**Ensure the plastic release liner is removed from all areas of PREPRUFE® 200 Membrane and Tape.**

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Concrete must be placed and compacted carefully to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

## Removal of Formwork

PREPRUFE®200 Membrane can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. PREPRUFE®200 Membrane is not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 $N/mm^2$) is recommended prior to stripping formwork supporting PREPRUFE®200 Membrane. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

As a guide, to reach the minimum compressive strength stated above, a structural concrete mix with an ultimate strength of 6000 psi (40 $N/mm^2$) will typically require a cure time of approximately 6 days at an average ambient temperature of 25°F (-4°C), or 2 days at 70°F (21°C).

## Supply

| DIMENSIONS (NOMINAL) | PREPRUFE® 200 MEMBRANE | PREPRUFE® CJ TAPE (LT OR HC*) | PREPRUFE® TAPE (LT OR HC*) |
|---|---|---|---|
| Thickness | 0.032 in. (0.8 mm) | | |
| Roll size | 4 ft x 115 ft (1.2 m x 35 m) | 8 in. x 49 ft (200 mm x 15 m) | 4 in. x 49 ft (100 mm x 15 m) |
| Roll area | 460 $ft^2$ (42 $m^2$) | | |
| Roll weight | 92 lbs (42 kg) | 8.6 lbs (4 kg) | 4.3 lbs (2 kg) |
| Minimum side/end laps | 3 in. (75 mm) | 3 in. (75 mm) | 3 in. (75 mm) |

* LT denotes Low Temperature (between 25°F and 86°F), HC denotes Hot Climate (>50°F)

| ANCILLARY PRODUCTS |
|---|
| BITUTHENE® Liquid Membrane (LM) 1.5 gal (5.7 liter) |
| Screw Fasteners (by others) |
| Self Tapping Washer Head Screws 0.5 in. (12 mm) long, galvanized or stainless steel as appropriate |

## Physical Properties

| PROPERTY | TYPICAL VALUE | TEST METHOD |
|---|---|---|
| Color | White | |
| Film thickness (nominal) | 0.020 in. (0.5 mm) | ASTM D3767—method A |
| Low temperature flexibility | Unaffected at -10°F (-23°C) | ASTM D1970 |
| Elongation | 300% min. | ASTM D412 modified[1] |
| Crack cycling at -10°F (-23°C) | Pass | ASTM C836 |
| Tensile strength, film | 4000 psi (27.6 MPa) min. | ASTM D412 |
| Peel adhesion to concrete | 5.0 lbs/in. (880 N/m) min. | ASTM D903 modified[2] |
| Resistance to hydrostatic head | 30 ft (10 m) | ASTM D5385 modified[3] |
| Puncture resistance | 135 lbs (600 N) min. | ASTM E154 |
| Permeance | 0,01 perms (0.6 ng/m$^2$Pa) | ASTM E96—method B |
| Water absorption | 0.5% maximum | ASTM D570 |
| Moisture vapor emission rate | 0.11 lb/1000 ft$^2$/24 hr | ASTM F1869-98 modified |

Footnotes:

1. Elongation of membrane is run at 2 in. (50 mm) per minute.

2. Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (7 days min.). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.

3. Hydrostatic tests are performed by casting concrete against the membrane with a lap across a 0.040 in. (1 mm) formed crack.





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Last Updated: 2022-01-11
gcpat.com/solutions/products/preprufe-comprehensive-waterproofing-system/preprufe-200-membrane