PREPRUFE® 300R Plus & 160R Plus
Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Description

Preprufe® 300R Plus & 160R Plus membranes are unique composite sheets comprising, a thick HDPE film, an aggressive pressure sensitive adhesive a weather resistant protective coating and an adhesive to adhesive seam overlap.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R Plus System includes:

- **Preprufe 300R Plus**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.

- **Preprufe 160R Plus**—thinner grade for blindside, zero property line applications against soil retention systems.

- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).

- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).

- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.

- **Adcor® ES**—waterstop for joints in concrete walls and floors

- **Preprufe Tieback Covers**—preformed cover for soil retention wall tieback heads

- **Preprufe Preformed Corners**—preformed inside and outside corners

Preprufe 300R Plus & 160R Plus membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; 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 structure.

Preprufe can be turned 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.

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents water migration and makes it unaffected by ground settlement beneath slabs

- **Fully-adhered adhesive to adhesive watertight laps and detailing**

- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground

- **Easy roll/kick out installation**—reduces installation time and cost

- **Release Liner free**—expedites installation and reduces construction site waste

- **Solar reflective**—reduced temperature gain

- **Simple and quick to install**—requiring no priming or fillets

- **Can be applied to permanent formwork**—allows maximum use of confined sites

- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement

- **Unaffected by wet conditions**—cannot activate prematurely

- **Inherently waterproof, non-reactive system:**
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling

- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack

Drawings are for illustration purposes only. Please refer to graceconstruction.com for specific application details.
Installation
The most current application instructions, detail drawings and technical letters can be viewed at graceconstruction.com. For other technical information contact your local Grace representative.

Preprufe Plus has colored zip strips at the top and bottom of the seam area on the edge of the roll. Both zip strips cover an aggressive adhesive. Once the yellow zip strip on the top of the membrane and the blue zip strip on the bottom of the membrane are removed, a strong adhesive to adhesive bond is achieved in the overlap area.

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 (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. 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—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 can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions <40°F (<4°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Plus Low Temperature (LT) is available for low temperature condition applications. Refer to Preprufe Plus LT data sheet for more information.

Horizontal substrates—Kick out or roll out the membrane HDPE film side to the substrate with the yellow zip strip facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave yellow and blue zip strips on the membrane until overlap procedure is completed.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge with the blue zip strip on top of the yellow zip strip. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 2). Immediately remove tinted plastic release liner from the tape.

Details
Refer to Preprufe Field Application Manual, Section V Application Instructions or visit graceconstruction.com. This manual gives comprehensive guidance and standard details.

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 if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove tinted plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

Pouring of Concrete
Ensure the plastic release liner is removed from all areas of Preprufe Tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete. Provide temporary protection from concrete over splash for areas of the Preprufe membrane that are adjacent to a concrete pour.

Removal of Formwork
Preprufe membranes 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 membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 N/mm²) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe.
Detail Drawings
Details shown are typical illustrations and not working details. For a list of the most current details, visit us at graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

Bituthene wall base detail (Option 1)

Procor wall base detail (Option 1)

Bituthene wall base detail (Option 2)

Procor wall base detail (Option 2)

1 Preprufe 300R Plus
2 Preprufe 160R Plus
3 Preprufe Tape
4 Bituthene®
5 Procor
6 Bituthene Liquid Membrane
7 Protection
8 Hydroduct®
9 Adcor ES
10 Preprufe CJ Tape
Supply

<table>
<thead>
<tr>
<th>Dimensions (Nominal)</th>
<th>Preprufe 300R Plus Membrane</th>
<th>Preprufe 160R Plus Membrane</th>
<th>Preprufe Tape (LT or HC*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>0.046 in. (1.2 mm)</td>
<td>0.032 in. (0.8 mm)</td>
<td></td>
</tr>
<tr>
<td>Roll size</td>
<td>3 ft. 10 in. x 102 ft. (1.17 m x 31.15 m)</td>
<td>3 ft. 10 in. x 120 ft. (1.17 m x 36.6 m)</td>
<td>4 in. x 49 ft (100 mm x 15 m)</td>
</tr>
<tr>
<td>Roll area</td>
<td>392 ft² (36 m²)</td>
<td>460 ft² (42 m²)</td>
<td></td>
</tr>
<tr>
<td>Roll weight</td>
<td>108 lbs (50 kg)</td>
<td>92 lbs (42 kg)</td>
<td>4.3 lbs (2 kg)</td>
</tr>
<tr>
<td>Minimum side/end laps</td>
<td>3 in. (75 mm)</td>
<td>3 in. (75 mm)</td>
<td>3 in. (75 mm)</td>
</tr>
</tbody>
</table>

* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C))
HC denotes Hot Climate (50°F (+10°C))

Ancillary Products

- Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)

Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value 300R Plus</th>
<th>Typical Value 160R Plus</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>white</td>
<td>white</td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>0.046 in. (1.2 mm)</td>
<td>0.032 in. (0.8 mm)</td>
<td>ASTM D3767</td>
</tr>
<tr>
<td>Lateral Water Migration Resistance</td>
<td>Pass at 231 ft (71 m) of hydrostatic head pressure</td>
<td>Pass at 231 ft (71 m) of hydrostatic head pressure</td>
<td>ASTM D5385, modified¹</td>
</tr>
<tr>
<td>Low temperature flexibility</td>
<td>Unaffected at -20°F (-29°C)</td>
<td>Unaffected at -20°F (-29°C)</td>
<td>ASTM D1970</td>
</tr>
<tr>
<td>Resistance to hydrostatic head</td>
<td>231 ft (71 m)</td>
<td>231 ft (71 m)</td>
<td>ASTM D5385, modified²</td>
</tr>
<tr>
<td>Elongation</td>
<td>500%</td>
<td>500%</td>
<td>ASTM D412, modified³</td>
</tr>
<tr>
<td>Tensile strength, film</td>
<td>4000 psi (27.6 MPa)</td>
<td>4000 psi (27.6 MPa)</td>
<td>ASTM D412</td>
</tr>
<tr>
<td>Crack cycling at -9.4°F (-23°C), 100 cycles</td>
<td>Unaffected, Pass</td>
<td>Unaffected, Pass</td>
<td>ASTM C836⁴</td>
</tr>
<tr>
<td>Puncture resistance</td>
<td>221 lbs (990 N)</td>
<td>100 lbs (445 N)</td>
<td>ASTM E154</td>
</tr>
<tr>
<td>Peel adhesion to concrete</td>
<td>5 lbs/in. (880 N/m)</td>
<td>5 lbs/in. (880 N/m)</td>
<td>ASTM D903, modified⁵</td>
</tr>
<tr>
<td>Lap peel adhesion at 72°F (22°C)</td>
<td>8 lbs/in. (1408 N/m)</td>
<td>8 lbs/in. (1408 N/m)</td>
<td>ASTM D1876, modified⁶</td>
</tr>
<tr>
<td>Lap peel adhesion at 40°F (4°C)</td>
<td>8 lbs/in. (1408 N/m)</td>
<td>8 lbs/in. (1408 N/m)</td>
<td>ASTM D1876, modified⁶</td>
</tr>
<tr>
<td>Permeance to water vapor transmission</td>
<td>0.01 perms (0.6 ng/(Pa x s x m²))</td>
<td>0.01 perms (0.6 ng/(Pa x s x m²))</td>
<td>ASTM E96, method B</td>
</tr>
</tbody>
</table>

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 Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the Preprufe membrane and allowed to cure (7 days minimum).
5. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
6. The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute at 72°F (22°C).

Specification Clauses

Preprufe 300R Plus or 160R Plus shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe. All Preprufe system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be lifted and carried by a minimum of two persons.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

Adcor is a trademark and Preprufe, Bituthene and Hydroduct are registered trademarks of W. R. Grace & Co. –Conn. Procor is a U.S. registered trademark of W. R. Grace & Co.–Conn., and is used in Canada under license from PROCOR LIMITED.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users’ consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.–Conn., 62 Whittemore Avenue, Cambridge, MA 02140.

In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

This product may be covered by patents or patents pending.

Copyright 2013. W. R. Grace & Co.–Conn.