**UNDERSEAL® UNDERSLAB MEMBRANE**

**Sheet Waterproofing Membrane**

**PRODUCT NAME**
Underseal® Underslab Membrane

**MANUFACTURER**
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[www.polyguard.com](http://www.polyguard.com)

**PRODUCT DESCRIPTION**

**BASIC USES**
Underseal® Underslab Membrane is used as a waterproofing membrane/vapor barrier to virtually eliminate water and vapor transmission through concrete slabs on grade. In addition to protecting floor finishes and indoor air quality, Underslab Membrane also acts as a barrier to methane gas and radon gas.

**PRODUCT FEATURES**
- Creates a continuous seal underneath the concrete slab.
- Forms a strong mechanical bond when the concrete, at time of pouring, intermingles with the fibers of the nonwoven geotextile.
- Creates a strong adhesive bond when the static load and thermal reactive heat of the concrete slab causes sealant/adhesive compound to have an intimate contact with the concrete surface. The Underslab System has been tested to ensure no water migration occurs between membrane and concrete.
- Underslab Membrane has a puncture resistance of 220 lbs., which is 64 times higher than current Class A Vapor Barrier requirements (2200 grams, or under 5 lbs). A higher puncture resistance is critical to the vapor barrier underslab system due to abuse caused by construction methods, i.e. concrete truck routes, motorized-equipment contact with rebar during concrete applications, normal foot traffic, and regular vibration.
- Features fully-adhered, watertight laps and other details.
- Acts as a barrier against toxic contaminants, including methane and radon gas, which may attempt to enter the structure through concrete cracks.
- May qualify for L.E.E.D. certification via these credits:
  - IAQ Credit 5 - Indoor Chemical and Pollutant Source Control (below-grade toxic barrier)
  - SS Credit 3 - Brownfield redevelopment
  - ID Credit 1 - Innovation in design

**COMPOSITION & MATERIALS**
Underseal® Underslab Membrane is a strong sheet membrane with a double-thickness, cross-laminated, high-density polyethylene (HDPE) backing laminated to a thick layer of proprietary waterproofing adhesive compound integrated into a high-strength, nonwoven geotextile fabric. Total membrane thickness is factory controlled at 85 mils.

On the fabric side, a 4-inch wide lap of waterproofing adhesive compound is left exposed along one edge with a removable silicone-coated release sheet. Expose this adhesive just prior to the installation of the adjacent roll to create a 4-inch wide self-adhesive overlap seam.

**TECHNICAL DATA**
See physical properties table.

**INSTALLATION**

**SUBSTRATE CONSIDERATIONS**
Underseal® Underslab Membrane is typically installed horizontally over prepared sub-bases such as compacted soil, mud slab, carton forms or #57 Stone.

**VERTICAL INSTALLATION**
Underslab Membrane may also be installed vertically. Refer to Blindside Membrane data sheet for vertical installation guidelines. Acceptable vertical installations include (1) on removable formwork for waterproof protection for perimeter and grade beam installations, (2) on elevator pits, or (3) against adjoining structures to provide waterproofing protection.

**SHOTCRETE APPLICATIONS IN THE WATER-TABLE**
For shotcrete applications in the water-table, contact Polyguard Architectural Technical Services at [archtech@polyguard.com](mailto:archtech@polyguard.com)

**SURFACE PREPARATION**
- Level, tamp or roll granular base prior to application of Underslab Membrane.
- Complete sub-base compaction per job specifications.
- Remove surface debris, including rocks, trash, concrete chunks, roots, and sticks.
- Provide a dry surface prior to application; i.e. never place the membrane in standing water.
- Remove standing water prior to concrete being poured on Underslab Membrane.

**MEMBRANE APPLICATION**
Place the Underslab Membrane with the polyethylene backing toward the sub base with the fabric facing up to receive the concrete. The membrane should be placed with the longest dimension parallel to the direction of concrete pour. Underslab Membrane should be lapped over the concrete footings and slab perimeter/grade beams to insure a tight bond with the concrete pour.

Install Underslab Membrane when temperatures are 25°F (-4°C) and rising.

**Penetrations**
Clean and roughen the pipe surface with sandpaper or a wire brush to insure adequate adhesion. Allow Detail Sealant PW 2 hours to cure.

If the annular space of pipe through an opening exceeds 1/2-inch, a patch of Underslab Membrane is required to close the gap. The size of the patch should extend a minimum 6-inches in all directions from the penetration under the field sheet. Apply 650 LT Liquid Adhesive or California Sealant at a rate of 50 – 75 square feet per gallon. While the 650 LT Liquid Adhesive or California Sealant is still tacky, seal the pipe with the LM-95 or Detail Sealant PW. Apply a cant/joint fillet with a min. 3/4-inch face of LM-95 or Detail Sealant PW extending onto the fabric side of the Underslab Membrane patch encapsulating the edge of the field membrane and onto the pipe a minimum of 3-inches. Allow LM-95 or Detail Sealant PW a minimum of 2 hours to cure.
If the annular space of pipe through an opening is 1/2–inch or less, apply 650 LT Liquid Adhesive or California Sealant to the fabric side of Underslab Membrane at a rate of 50 – 75 square feet per gallon. Apply a cant/fillet with a min. 3/4–inch face of LM-95 or Detail Sealant PW extending onto the fabric side of the Underslab Membrane and onto the pipe a minimum of 6–inches.

If pipes or penetrations are in tight clusters and a more flowable detailing liquid is required, use LM-85 SSL Membrane; refer to US 16 Detail.

**Gas Vapor**

Follow the Penetrations protocol and then wrap the penetration with Fabric Tape. Terminate and secure the top edge with a screw clamp or similar restraining / lamping devise.

**Side Laps**

If any lap areas become dirty during construction, remove all debris and/or dust from the polyethylene backing. Clean the backing with 30% isopropyl alcohol prior to exposing the 4–inch self-adhesive seam. Remove the 4–inch wide silicone–treated release sheet and align the adjacent roll for seaming. Once the lap is secured, roll with a min. 75 lb. linoleum roller to obtain full adhesion.

**End Laps**

The Underseal® Underslab Membrane overlap must be 4–inches. Center a 12–inch wide piece of Fabric Tape over the seam, extend a minimum 6–inches on each side of lap in a heavy coat at a rate of 50 – 75 square feet per gallon of tacky 650 LT Liquid Adhesive or California Sealant. Apply even pressure with the linoleum roller to obtain full adhesion.

**Preformed Corners**

Inside Corner Boots 12" x 12" x 12"; Outside Corner Boots 6" x 6" x 6" and Pit Top Corner Boots 6” x 6” x 6” are required. Refer to US 11, US 17 and US 21 details for installation instructions.

**Patching**

Take precautions to protect the Underslab Membrane during placement of reinforcing steel and concrete. Visually inspect the membrane prior to pouring of concrete for any punctures or damage to membrane which needs to be repaired. Patch any damaged areas using Fabric Tape installed over 650 LT Liquid Adhesive or California Sealant at a coverage rate of 50 – 75 square feet per gallon to the damaged Underslab Membrane. Patches must extend a minimum of 6–inches in all directions from the damaged area. All patches must be rolled with a hand roller or linoleum roller to insure proper adhesion and seal. Repaired areas must be sealed around the edges with Detail Sealant PW.

**Rebar Chairs**

Steel reinforcement may be applied directly over the Underslab Membrane. It is important that reinforcement (rebar) chairs are compatible with the system. Compatible (rebar) chairs will distribute the load of the steel reinforcement sufficiently to reduce the risk of the chair puncturing the waterproofing membrane when fully loaded with the weight of the reinforcement steel and other common auxiliary loads.

Blocks, pavers or dobies made of concrete or brick are clearly the best choice. Individual chairs are acceptable as long as they have a flat base or bolsters with rails. Contact Polyguard Technical Service for approval and written permission for other types of rebar chairs.

**Pouring of Concrete**

The concrete overlay that is applied over the Underslab Membrane must be a minimum 3 1/2-inches. The structural slab must be sound to avoid buckling. It is recommended that concrete be poured within 30 days of membrane installation. 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.

**STORAGE AND HANDLING**

**MATERIAL HANDLING**

Membrane and accessories should be unloaded and stored carefully. Cartons and containers must be protected from weather, sparks, flames, excessive heat, cold and lack of ventilation. DO NOT stack membrane material higher than 5’ vertically, nor double stack pallets. Cartons should be stored on pallets and covered to prevent water damage.

**PRECAUTIONS**

Underseal® Underslab Membrane is adversely affected by ultraviolet light. The membrane must be covered as soon as possible and not left exposed to sunlight for over 30 days. Extended exposures will be considered, please contact Polyguard for technical assistance.

This product should not be installed when it is raining or when freezing precipitation is occurring.

The 650 Liquid Adhesive and California Sealant are industrial coatings and would be harmful or fatal if swallowed. It is marked as red label from the stand-point of flash point. Prohibit flames, sparks, welding and smoking during application. Refer to product label for handling, use and storage precautions. Solvents can cause eye irritation; flush with water and contact physician. Avoid prolonged contact with skin and breathing of vapor or spray mist from liquid adhesive. In confined areas, use adequate forced ventilation, fresh air masks, explosion-proof equipment and clean clothing. Avoid solvent contact with light bulbs or other high temperature surfaces. The information on this data sheet is designed to be helpful to the reader. It is based on experience and information considered to be accurate and true. Readers should carefully consider and verify the information through investigation of areas. Polyguard does not warrant the results to be obtained. Additionally, please read everything here in conjunction with Polyguard’s conditions of sale, which are applicable to everything supplied by us. No statement here is intended for use which would infringe upon patent or copyright.

**SAFETY**

SDS documents for all Polyguard products can be obtained at our website www.polyguard.com. Call Polyguard Products, Inc. at (214) 515-5000 with questions.

**WARRANTY**

We, the manufacturer, warrant only that this product is free of defects, since many factors which affect the results obtained from this product are beyond our control; such as weather, workmanship, equipment utilized and prior condition of the substrate. We will replace, at no charge, product proved to be defective within twelve (12) months of purchase, provided it has been applied in accordance with our written directions for uses we recommend as suitable for this product. Proof of purchase must be provided. A five (5) year material or system warranty may be available upon request. Contact Polyguard Products, Inc. for further details.
TECHNICAL SERVICES
Technical assistance, information and Polyguard’s products are available through a nationwide network of distributors and architectural representatives, or contact Polyguard Products, Inc.
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Email: archtech@polyguard.com
Website: www.polyguard.com

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PACKAGING

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<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>TYPICAL VALUE</th>
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<tbody>
<tr>
<td>FILM COLOR</td>
<td>ASTM D 1000</td>
<td>Black/White</td>
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<tr>
<td>MEMBRANE THICKNESS</td>
<td>ASTM D 4632</td>
<td>85 mils</td>
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<tr>
<td>TENSILE STRENGTH</td>
<td>ASTM D 4632</td>
<td>80 lbs.</td>
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<tr>
<td>TENSILE STRENGTH, FILM</td>
<td>ASTM D 412</td>
<td>4,250 psi</td>
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<tr>
<td>HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC USING A CONSTANT HEAD</td>
<td>ASTM D 4716</td>
<td>No measurable flow</td>
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<tr>
<td>(IN-PLANE) HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC BY RADIAL FLOW</td>
<td>ASTM D 6574</td>
<td>No water flow</td>
</tr>
<tr>
<td>BREAKING STRENGTH OF 1” WIDTH SAMPLE POLYETHYLENE GEOMEMBRANE LAYER</td>
<td>ASTM D 882</td>
<td>5470 psi</td>
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<tr>
<td>ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT COMPOUND</td>
<td>ASTM D 412</td>
<td>&gt; 460%</td>
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<tr>
<td>PERMEANCE TO WATER VAPOR TRANSMISSION</td>
<td>ASTM E 96 Method B</td>
<td>0.01 perms</td>
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<tr>
<td>CRACK CYCLING</td>
<td>ASTM C 836 Tested @ -35°F</td>
<td>No effect</td>
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<tr>
<td>PEEL ADHESION TO CONCRETE</td>
<td>ASTM D 903</td>
<td>31.3 lbs./in.</td>
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<tr>
<td>LAP PEEL ADHESION</td>
<td>ASTM D 1876</td>
<td>87.8 lbs./in.</td>
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<tr>
<td>LOW TEMPERATURE FLEXIBILITY</td>
<td>ASTM D 1870</td>
<td>180° bend over 1” mandrel at -20°F (-29°C)</td>
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<tr>
<td>PUNCTURE RESISTANCE (MINIMUM)</td>
<td>ASTM E 154</td>
<td>220 lbs.</td>
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<tr>
<td>RESISTANCE TO HYDROSTATIC HEAD (MINIMUM)</td>
<td>ASTM D 5385</td>
<td>231 ft.</td>
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<td>EXPOSURE TO SOIL Fungi</td>
<td>GSA-PBS 07115 (16 weeks)</td>
<td>No effect</td>
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<tr>
<td>RESISTANCE TO PERMEANCE BY METHANE GAS</td>
<td>ASTM D 1434</td>
<td>3.48 x 10^-7 ft^3/(ft^2/hr/psi)</td>
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<td>RESISTANCE TO RADIOACTIVE RADON GAS</td>
<td>Radon Reduction Technology Laboratory</td>
<td>97.10%</td>
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<tr>
<td>WATER ABSORPTION (MAXIMUM)</td>
<td>ASTM D 570</td>
<td>0.1%</td>
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<tr>
<th>PACKAGING</th>
<th>PART NUMBER</th>
<th>UNIT SIZE</th>
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<tr>
<td>UNDERSLAB MEMBRANE</td>
<td>850</td>
<td>48” x 50’ roll</td>
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Required Accessories:

- FABRIC TAPE: UNDERSEAL FABRIC TAPE
- 650 LT LIQUID ADHESIVE: 650-5 LQ ADH S GA
- 650 LT LIQUID ADHESIVE: 650-5 LQ ADH H GA
- CALIFORNIA SEALANT: CALSEAL5
- US INSIDE CORNER BOOT: US INSIDE CORNER BOOT 12” X 12” X 12”
- US OUTSIDE CORNER BOOT: US OUTSIDE CORNER BOOT 12” X 12” X 6”
- US PIT TOP CORNER BOOT: PREFABRICATED 6” CORNER BOOTS

Possible Accessories:

- 606 TAPE (for a vertical termination to existing concrete) 60604 4” x 50’ rolls (6/ctn)
- 606 TAPE (for a vertical termination to existing concrete) 60606 6” x 50’ rolls (4/ctn)
- LM-85 SSL: LM85-2 SSL
- LM-85 SSL: LM85-5 SSL
- LM-95: LM952
- DETAIL SEALANT PW™: DETAIL SEALANT PW – SAU 20 OZ
- DETAIL SEALANT PW™: DETAIL SEALANT PW – 3 GAL

Drainage Accessories:

- POLYFLOW® 15: POLYFLOW15
- POLYFLOW® 18: POLYFLOW18
- TOTALFLOW™: TOTAL FLOW
- TOTALFLOW™ END OUTLET (4”): OUTLET4-UNIV
- TOTALFLOW™ TEE OUTLET (4”): TEE4-UNIV

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Common Polyguard® Underseal® Underslab Membrane Applications

These diagrams are not intended to be application instructions, simply illustrations.

Please Note: Not intended to be full details. For full application detail on these configurations, see Polyguard details US1, US10, US15, US17, or contact Polyguard Products.