

UNDERSEAL® UNDERSLAB MEMBRANE

Sheet Waterproofing Membrane

Product Data Sheet

PRODUCT NAME

Underseal® Underslab Membrane

MANUFACTURER

Polyguard Products, Inc.
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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 toxin 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 Blindsight 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

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. Apply a cant/ fillet with a min. 3/4-inch face of LM-95 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 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 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

US Inside Corner Boots 12" x 12" x 12", US Outside Corner Boots 12" X 12" 18" and US 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™ or LM-95.

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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Website: www.polyguard.com

PROPERTY	TEST METHOD	TYPICAL VALUE
FILM COLOR		Black/White
MEMBRANE THICKNESS	ASTM D 1000	85 mils
TENSILE STRENGTH	ASTM D 4632	80 lbs.
TENSILE STRENGTH, FILM	ASTM D 412	4,250 psi
HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC USING A CONSTANT HEAD	ASTM D 4716	No measurable flow
(IN-PLANE) HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC BY RADIAL FLOW	ASTM D 6574	No water flow
BREAKING STRENGTH OF 1" WIDTH SAMPLE POLYETHYLENE GEOMEMBRANE LAYER	ASTM D 882	5470 psi
ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT COMPOUND	ASTM D 412	> 460%
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.01 perms
CRACK CYCLING	ASTM C 836 Tested @ -15°F	No effect
PEEL ADHESION TO CONCRETE	ASTM D 903	31.3 lbs./in.
LAP PEEL ADHESION	ASTM D 1876	8.7 lbs./in.
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970 180° bend over 1" mandrel at -20°F (-29°C)	No effect
PUNCTURE RESISTANCE (MINIMUM)	ASTM E 154	220 lbs.
RESISTANCE TO HYDROSTATIC HEAD (MINIMUM)	ASTM D 5385	231 ft.
EXPOSURE TO SOIL FUNGI	GSA-PBS 07115 (16 weeks)	No effect
RESISTANCE TO PERMEANCE BY METHANE GAS	ASTM D 1434 tested using 99.99% purity	3.48 x 10 ⁻⁷ ft ³ /(ft ² • hr • psi)
RESISTANCE TO RADIOACTIVE RADON GAS	Radon Reduction Technology Laboratory % reduction in radon gas diffusion	97.10%
WATER ABSORPTION (MAXIMUM)	ASTM D 570	0.1%

PACKAGING	PART NUMBER	UNIT SIZE
UNDERSLAB MEMBRANE	850	48" x 50' roll
Required Accessories:		
*FABRIC TAPE	UNDERSEAL FABRIC TAPE	12" x 200' roll
650 LT LIQUID ADHESIVE	650-5 LIQ ADH 5 GA	5-gallon pail
650 LT LIQUID ADHESIVE	650-5 LIQ ADH 1 GA	4 – 1 gal pails/ctn
CALIFORNIA SEALANT	CALSEAL5	5-gallon pail
US INSIDE CORNER BOOT 12" X 12" X 12"	US 12" INSIDE CORNER BOOT	25 pcs/ctn
US OUTSIDE CORNER BOOT 12" X 12" X 6"	US OUTSIDE CORNER BOOT 12"	25 pcs/ctn
US PIT TOP CORNER BOOT 6" X 6" X 6"	PREFABRICATED 6" CORNER BOOTS	25 pcs/ctn
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	2-gallon pail
LM-85 SSL	LM85-5 SSL	5-gallon pail
LM-95	LM952	2-gallon pail
*DETAIL SEALANT PW™	DETAIL SEALANT PW – SAU 20 OZ	20 sausages/ctn
*DETAIL SEALANT PW™	DETAIL SEALANT PW – 3 GAL	3-gallon pail
<i>*DETAIL SEALANT PW™ IS ONLY TO BE USED FOR TOP TERMINATION FOR FABRIC TAPE AND ENDLAPS.</i>		
Drainage Accessories:		
POLYFLOW® 15	POLYFLOW15	4' x 50' roll
POLYFLOW® 18	POLYFLOW18	4' x 50' roll
TOTALFLOW™	TOTAL FLOW	24" x 50' roll
TOTALFLOW™ END OUTLET (4")	OUTLET4-UNIV	N/A
TOTALFLOW™ TEE OUTLET (4")	TEE4-UNIV	N/A

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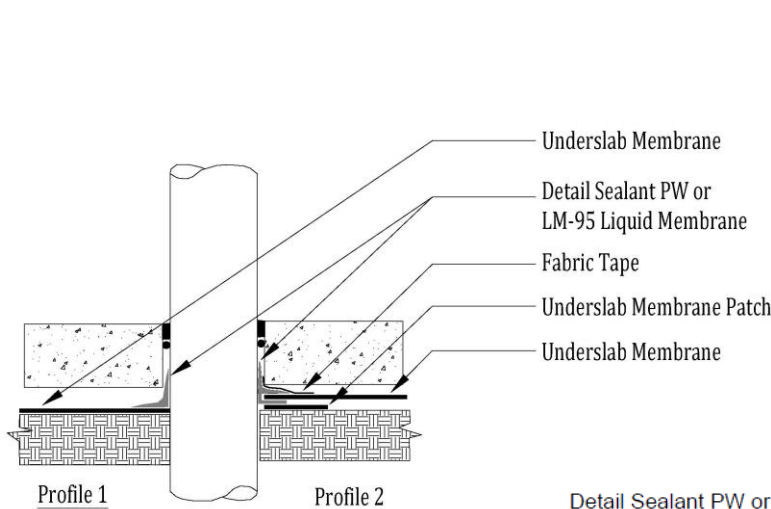
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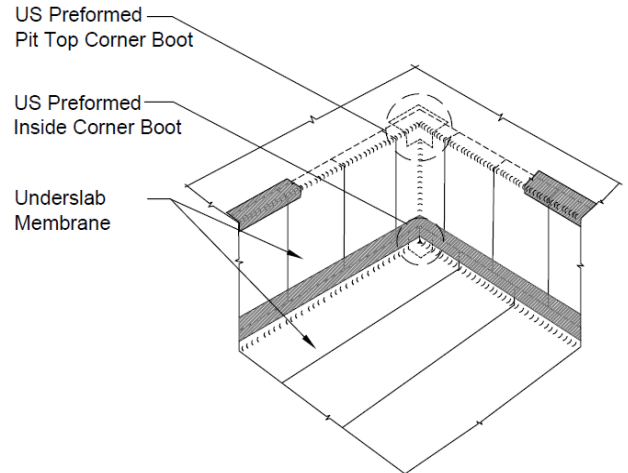
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Common Polyguard® Underseal® Underslab Membrane Applications

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

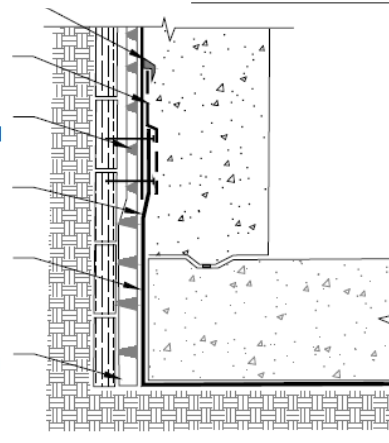


Section @ Underslab Membrane Penetration Detail

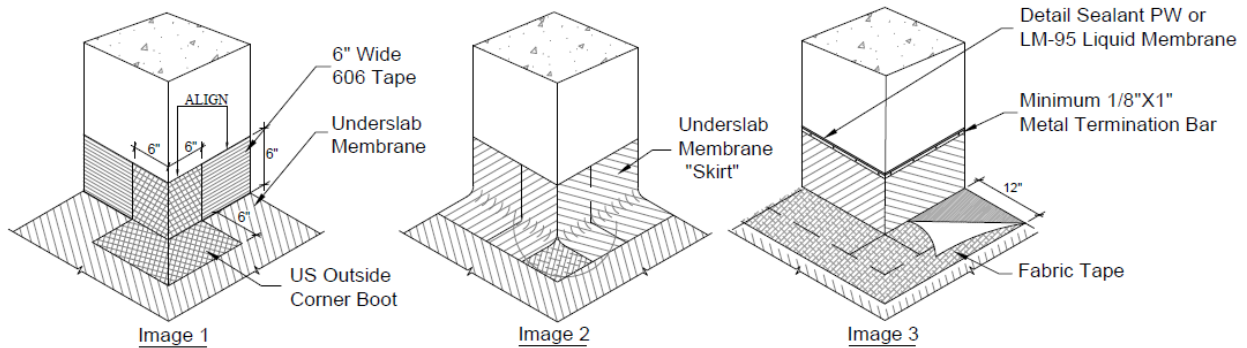


Isometric Overview @ Sump / Elevator Pit

- Detail Sealant PW or LM-95 Liquid Membrane
- Fabric Tape
- Polyflow 15 / 15P Sheet-Molded Drainboard
- Blindside Membrane
- Underslab Membrane
- Totalflow High-Capacity, Sheet Molded Drainboard



Section @ Underslab Membrane Tie-In to Blindside Membrane



Preformed US Outside Corner Boot at a Corner or Column

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.