



## UNDERSEAL® XT SERIES MEMBRANE

*Waterproofing Membranes with Termite Barrier*

**UNDERSEAL XTP MEMBRANE - with built in protection board**

*Specification Data Information*

U.S. Patent No. 7,488,523

### 07100

The following information is listed according to the editorial style prescribed by the Construction Specifications Institute, for use in specification data sheets.

#### 1. Product Name

**Polyguard XT Series Waterproofing Membranes with Termite Barrier**

- **Underseal XTP Membrane - Built in Protection Board**
- **Underseal XTP Detail Strip**

#### 2. Manufacturer

**Polyguard Products, Inc.**

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#### 3. Product Description

**Basic Uses:** The primary use of **Polyguard Underseal® XT Membranes** are for concrete foundation waterproofing and/or for protection from termite intrusion. The membrane can be applied directly to concrete, or to insulated concrete form (ICF) foundations.

Other applications include mud slabs, tunnels, plaza decks, planters and related applications where waterproofing is critical, and termite remediation (protecting cracks and crevices from termite intrusion).

Advantages include:

- **Polyguard Underseal XT Membranes** have been found to be an effective termite barrier where properly applied to surfaces needing protection from termite penetration.
- **Polyguard Underseal XT Membranes** are an enhanced version of the original **Polyguard 650** waterproofing system. The **650 Membrane** has been used on commercially waterproofed structures since 1970. A mid 1990's search of architectural specifications for large (>\$5 million) projects across the US showed **Polyguard 650** to be named on 54% of all projects using self-adhesive sheet membrane waterproofing.
- The enhanced puncture resistance and tear resistance in **Polyguard's Underseal XT Membranes** have eliminated the need for a separate protection system to protect the membrane on vertical foundation walls. Puncture and tear properties of **Polyguard Underseal XT Membranes** significantly exceed those of the most widely used "fanfold" protection systems.
- **Polyguard Underseal® XTP and XTP Detail Strip** are covered by ICCES Legacy evaluation report number 2136.

**Limitations:** **Polyguard Membrane** can be adversely affected by long term exposure to ultraviolet light.

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This information is based on our best knowledge, but  
POLYGUARD cannot guarantee the results to be obtained.



Polyguard is ISO 9001 certified since 1996.

The waterproofing system must be covered as soon as possible and not left exposed to sunlight for more than 30 days.

A termination bar must be used at the top termination when **Polyguard Underseal XTP** is being installed on vertical surfaces.

**Polyguard Underseal® XTP Membrane** has a triple thickness backing which is somewhat more stiff than regular **Polyguard 650 Membrane**. The **Underseal XTP Membrane** should not be used for detailing. Strips of **Underseal XTP Detail Strip**, should be used for detailing.

Porous substrates may adversely affect adhesion. **Polyguard** membranes are not recommended for pond or tank liners or other underwater applications except when applied between two concrete slabs.

Caution should be taken to prevent contact of the rubberized asphalt element with products containing fresh coal tar or coal tar pitch. Sealants and liquid waterproofing products containing polysulfide polymer may be incompatible.

**Composition and Materials:** **Polyguard Underseal XT Series Membranes** are strong, pliable, self adhering sheet membranes consisting of a triple thickness polyethylene backing laminated to an extra thick layer of rubberized asphalt. **Underseal XT Membranes** adhere tightly and permanently to concrete. The polyethylene sheet forms a continuous barrier impervious to water. The adhered rubberized asphalt prevents lateral migration of any water which might find its way behind the sheet. Total membrane thickness is factory controlled.

The **Underseal® XTP Membrane** has the added feature of a triple thickness backing. This extra thickness backing eliminates the need for a separate protection board system on flat vertical surfaces.

Accessories include:

1. **Polyguard Shur-Tac Liquid Adhesive** is a solvent-free adhesive usable for both concrete and extruded polystyrene (ICF) surfaces. Coverage rate is 350-450 sq. ft. per gallon.
2. **Polyguard 650 LT Liquid Adhesive** is a fast drying, high tack rubber based adhesive in a solvent solution used to prepare concrete surfaces for **650 Membrane**. **650 LT Liquid Adhesive** is available for use at temperatures 25°F (-4°C) and rising. Coverage rate of 250 - 350 sq. ft. per gallon. **This material is not suitable for application to extruded polystyrene surfaces (ICF).**
3. **Polyguard 650 Mastic**, a rubberized asphalt mastic with a low solvent content, is used to terminate membranes, provides a positive seal at the top of the membranes, on the footing base, at penetrations, and at overlaps in the membrane. **650 Mastic** should never be applied underneath **Polyguard** membranes. Coverage is 100 lin. Ft./Gal. Of 1" wide bead.
4. **Polyguard 95 Liquid Membrane** is a two-component elastomeric extended rubber urethane, mixed prior to application. **LM-95** is used with **Polyguard** membranes to eliminate double-ply sheet on inside and outside corners, as a fillet on inside corners, for pipe penetrations and in planter boxes where sheet membrane application is difficult. Coverage rate is:

Fillet only:	65-75 Lin. Ft. per gallon
Fillet plus 6" on horizontal:	14 Lin. Ft. per gallon
Flashing:	90 mil 17 Sq. Ft. per gallon
5. **Polyguard LowFlow™ Protection and Drainage System** is a high-strength, multi layer fabric composite. Used to protect underlying waterproofing membranes and provide a low cost drainage mat which, with a flow rate of 0.84 gal./min./ft., is suitable for most soil conditions.
6. **Polyguard PolyFlow® 15-P and 18-H Protection/Drainage Systems** are two part prefabricated geocomposite drains consisting of a formed polystyrene core covered on one side with polypropylene filter fabric. This allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The primary difference in the use of the products is that **15-P** is used for vertical surfaces, **18-H** is used on horizontal surfaces.

**Applicable Standards:**

**Polyguard Underseal XTP** and **Detail Strip** conform to the following specifications:

- FCGS - 07111
- GSA - PBS 07111
- NAVFAC TS-07111
- Corps of Engineers CEG-07111-3-82
- Veteran's Administration H-08-1 Section 07113
- American Railway Engineering Association AREA 29-2
- AIA MASTERSPEC Section 07115

4. **Technical Data:**

PROPERTY	ASTM TEST METHOD	Underseal® XTP (Triple Backing Thickness)	Underseal® XTP Detail Strip
Thickness - membrane	D 1000	65mils.	75mils.
Backing Thickness	D1000	20 mils.	20 mils.
Tear Strength (either direction)	D4533 (Lb)	50 lbs.	50 lbs.
Permeance	E96 (Method B) grains/sq.ft./hr./in. HGF	<.01	<.01
Lap Peel Adhesion	ASTM-1876 (modified <sup>1</sup> ) (LB/inch width)	8.0	8.0
Low Temperature Pliability	D 146 - 180° bend over 1" mandrel @ -25°	No effect	No effect
Puncture Resistance-Membrane	Puncture with rod D4833 (.35" dia. rod) (lb)	40 (177N)	54 (177N)
	Puncture with blunt rod E 154 (1" dia. rod) (lb.)	>120 lbs. (>534N)	>120 lbs. (>534N)
Resistance to Hydrostatic Head	D 5385 (231 Head Ft. of Water)	231 ft.	231 ft.
Water Absorption	ASTM D 570 (%)	0.18 %	0.34 %

5. **Installation:**

Material Storage: Membrane and accessories should be unloaded and stored carefully. Cartons and containers should be protected from weather, sparks, flames, excessive heat, cold and lack of ventilation. Do not stack membrane higher than 5' and do not double stack pallets.

Application Temperatures: Materials should only be applied under proper weather conditions. **Underseal XTP** and **XTP Detail Strips** should be applied at temperatures above 32°F.

Preparatory Work: Concrete walls must be cured for 7 days, minimum. Structural lightweight concrete is more porous; lighter concrete retains more water, therefore a 14 day cure is a must to dissipate the water. Application of the membrane before the allowed cure time may cause excessive bubbling of the membrane because of out gassing of the moisture.

An exception to the above cure time requirements is permitted for concrete poured into Insulated Concrete Forms (ICF). Membrane may be applied to insulating concrete forms at any time after installation.

Foundation walls of concrete and block must be clean, dry, smooth and monolithic. Broom surfaces are not recommended. Surfaces must be free of voids, spalled areas, sharp projections, loose aggregate and form release agents. Concrete curing compounds containing oil, wax or pigments should not be used. Form releases must be the self dissipating type which will not transfer to the concrete. Surface holes or cavities should be filled and finished flush with a portland cement grout or concrete parge coat. Make sure that all horizontal surfaces slope toward drainage.

**All inside and outside corners** must be addressed prior to field application with a 12" strip of **Underseal**

**XTP Detail Strip** centered on the corner. **Horizontal inside corners** must be addressed with a fillet using the **Polyguard #95 Liquid Membrane** (do not prime surfaces before application of #95 LM) with a 3/4" face, or a polymer modified grout. This allows a sloped area for the membrane to attach to in the corners instead of a 90° angle, which could leave a trap for water to migrate if the membrane is not pressed in the corner well enough. Apply liquid adhesive to surface and apply the 12" strip of **Underseal XTP Detailing Strip** centered on the corner. **Note: Do not use Underseal XTP Membrane, which is less conformable, for detailing.**

**Priming:** All concrete surfaces to receive the membrane must be primed with a liquid adhesive at a rate of 250-350 sq. ft. per gallon. All primed areas not covered within the same working day with membrane must be reprimed.

**Special surface preparation instructions for Insulated Concrete Forms:** All dust on the forms should be removed by a broom or by hose. **Dust will prevent membrane adhesion.**

**Membrane installation on vertical surfaces:** Vertical applications of membrane are the most common placements, with lifts of up to 8'. Walls over 8' should be shingled layered in lifts. Side laps must be a minimum of 3" and end laps must be 6". All seams must be rolled with a wall type narrow roller. Use heavy hand pressure while smoothing out the membrane surface. A tooled bead of **650 Mastic** must be used on all exposed cut ends of the membrane, terminations and at the base of the footing.

**Termination Bar:** A horizontal termination bar is required to secure the top of **Underseal XT series membranes** on vertical walls. Fasten every 8" O.C.

If **Polyguard Underseal XTP** is being used on the wall surfaces, additional protection system is not necessary.

Drainage systems are used to relieve the hydrostatic head of water pressure from the wall. Some drainage systems may be adhered directly to the waterproofing membrane. Contact **Polyguard** for recommendations.

**Backfill:** No waiting is required before backfilling. Backfill material should be dry sand or dry spoil dirt which is free from large clods, rocks, tree roots and debris. Backfill should be readily compactable and should be placed in 6" to 8" compacted lifts to minimize vertical settlement. Avoid backfill with high water content. Use mechanical compaction where necessary to avoid settling, take care to avoid direct impact of the waterproofing system.

**Horizontal Application:** Concrete surfaces must be cured for 7 days, minimum. Structural lightweight concrete is more porous, lighter concrete retains more water, a 14 day cure is a must to dissipate the water. Membrane should not be placed over insulating concrete. Application of the waterproofing before the allowed cure time may cause excessive bubbling of the membrane because of out gassing of the moisture.

Cold joints, T-joints and evident working cracks should be sealed with joint fillers, water stop or sealant. Cracks wider than 1/16" must be pretreated with a 12" strip of membrane. Control joints must be filled with **#95 Liquid Membrane** before the 12" pre-strip. All horizontal surfaces must slope toward drainage.

All expansion joints, contraction joints and control joints should be properly sealed with joint fillers, water stop or sealant. An inverted 8" (203 mm) strip, shall be placed directly over the joint, covered with a 12" strip of membrane *adhesive side down* centered over the 8" strip before the final membrane application. If over 1/2" of movement is designed, an appropriate expansion joint system must be specified.

All surfaces to receive the membrane must be primed with liquid adhesive at a rate of 250-350 sq. ft. per gallon. All areas not covered within the same working day with membrane must be reprimed.

On the horizontal surfaces, apply membrane from low to high pitch for maximum drainage. Use linoleum roller or water filled garden roller, covered with two plies of indoor-outdoor carpet to roll membrane immediately after application, with special attention at overlaps and "T-joints". Seal all end laps with **Polyguard 650 Mastic** at the end of each work day.

**All inside and outside corners** must be addressed prior to field application with **Polyguard 650 Liquid Adhesive** or **Shur-Tac Liquid Adhesive** and a 12" strip of **Underseal XTP Detail Strip** centered on the corner. Another application is the use of **#95 Liquid Membrane** 6" in all directions before application of membrane.

**Horizontal inside corners** must be addressed with a fillet using the **Polyguard #95 Liquid Membrane** with a 3/4" face, or a polymer modified grout. (**Do not prime surfaces before application of #95 Liquid Membrane**). This allows a sloped area for the membrane to attach to in the corners instead of a 90° angle,

which could leave a trap for water to migrate if the membrane is not pressed in the corner well enough.

Drains must be properly designed with mechanical clamping rings and weepholes at the membrane level.

After the waterproofing application is complete and inspected for any problem spots the area can be flood tested with 2" head of water for a 24 hour period.

Topping, such as concrete, soil or pavers, may be used to finish a horizontal application. Multi level drainage systems are recommended at both topping and **Polyguard 650 Membrane** level. If using thin set grout to apply tile as a topping an acrylic latex admixture must be used. This helps with the adhesion to the polyethylene backing of the membrane. On tile application protection systems are not necessary.

On horizontal installations, protection system must be applied as soon as possible after the membrane application and water test is complete. Approved horizontal protections systems are:

- **Polyguard 1/8" asphaltic hard board** for normal construction traffic.

Approved horizontal drainage systems are:

- **Polyguard PolyFlow 18 H**

**Packaging:**

**Underseal XTP** available in 39.36" x 61' - 200 sq. ft. per carton

**Underseal XTP Detail Strip** available in 12" x 50' - 4 rolls per carton - 200 sq. ft. per carton.

**Precautions:** **Polyguard** solvent based liquid adhesives are marked as red label because of flash point. Prohibit flames, sparks, welding and smoking during application.

Adequate ventilation must be provided when working with **Polyguard** solvent based liquid adhesives and with **Liquid Membrane 95**. Avoid prolonged skin contact and inhalation.

Please refer to MSDS sheets of all **Polyguard** products to become familiar with precautions.

**Material Safety Data Sheets:** All Material Safety Data Sheets (MSDS) and precautionary labels should be read and understood by user employees and supervisory personnel before using these products. Consult **Polyguard Products** MSDS sheets, as well as OSHA regulations, for additional safety and health information on the products discussed here.

6. **Availability and Cost**

Contact **Polyguard** for information on distributors and availability.

7. **Warranty**

**Polyguard** products are warranted to be free of defects in manufacture for five years. Materials will be provided at no charge to replace any defective products.

8. **Maintenance**

No maintenance is required, if installed according to instructions.

9. **Technical Service**

Contact **Polyguard Products** for technical questions.

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