



## CONCRETE ROOF WATERPROOFING SYSTEM Sample Design Guideline

# URETHANE

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## **CONCRETE ROOF WATERPROOFING SYSTEM SAMPLE DESIGN GUIDELINES – URETHANE**

### **PART 1 – GENERAL**

#### **1.01 DESCRIPTION**

- A. This guideline includes the installation of the liquid applied urethane coating roof system to waterproof, protect and restore concrete roofs. The coating process effectively seals the concrete, covers cracks and surface imperfections with a highly elastic base coat and protects the roof with a tough durable finish coat.
- B. Work included is labor, materials, equipment and accessories and related services to complete the application in accordance with guidelines and details as approved by ITW POLYMERS SEALANTS NORTH AMERICA, INC.
- C. Work excluded is replacement of roof accessories such as drains, vents and other penetrations and structural roof repair.

#### **1.02 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: ITW POLYMERS SEALANTS NORTH AMERICA, INC. will furnish upon request, certification the material meets the physical properties stated in this guideline.
- B. Contractor Qualifications: All work to be completed must be done by an ITW POLYMERS SEALANTS NORTH AMERICA, INC. preferred applicator.
- C. No deviation from this guideline will be accepted without prior written approval of ITW POLYMERS SEALANTS NORTH AMERICA, INC.

#### **1.03 SUBMITTALS**

- A. Warranty pre-installation notifications are required prior to the installation of the warranted systems.

#### **1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Deliver material in original, unopened packages and containers.
- B. Containers are to be labeled with manufacturer's name, product name, description, and identification.
- C. Store materials in a dry area above 40°F (4.45°C) and below 80°F (26.7°C) protect from water and direct sunlight.
- D. Any materials damaged in handling or storage must not be used.
- E. Deliver SDS for each product. Consult SDS and Technical Data Sheet for each product used before beginning work.

#### **1.05 JOB CONDITIONS (CAUTIONS AND WARNINGS)**

- A. All mechanical equipment, vents, skylights, etc., should be in place before the roofing system is installed.
- B. Mechanical units (blowers, HVAC) should be prevented from distributing solvent fumes into the building.

- C. Coatings should be protected from traffic and other abuse until completely cured and installation is complete.
- D. Application of coatings with spray equipment may require some masking and possible erection of wind screens to prevent overspray and drift damage. Protect surfaces of unrelated areas from coatings and overspray possibilities.
- E. Application shall proceed to dry, clean surfaces only. In planning work consider environment and weather related conditions such as frost, mist, dew, condensation, humidity, and temperature. Temperature should be above 40°F (4.45°C), more than 5°F above the dew point and rising, for best application results.
- F. Sufficient safety belts and lines should be provided. A wet surface or a surface that is not thoroughly cured can be very slippery. All work environments should comply with current OSHA regulations.

#### **1.06 WARRANTY**

- A. ITW POLYMERS SEALANTS NORTH AMERICA, INC. warrants that materials provided are free from defects in manufacturing and will replace any material found to be defective.
- B. ITW POLYMERS SEALANTS NORTH AMERICA, INC. /Contractor Coating System Warranty is available through preferred contractors and at a cost. Consult ITW POLYMERS SEALANTS NORTH AMERICA, INC. for further details of the Warranty Program.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. The components of the coating system are to be products of ITW POLYMERS SEALANTS NORTH AMERICA, INC. or products approved by ITW POLYMERS SEALANTS NORTH AMERICA, INC. as compatible; or approved equal.

### **2.02 BASE COAT - ERSYSTEMS® POLYURETHANE 300 AROMATIC BASE COAT (Gray)**

- A. See Technical Data Sheet

### **2.03 FINISH COAT - ERSYSTEMS® POLYURETHANE 300 ALIPHATIC FINISH COAT (White)**

- A. See Technical Data Sheet

### **2.04 FINISH COAT - ERSYSTEMS® FINISH COAT ALUMINUM**

- A. See Technical Data Sheet

### **2.05 CRACK & DETAIL SEALANT - PERMATHANE® SM7108.**

- A. See Technical Data Sheet

### **2.06 CONCRETE PRIMER - PACIFIC POLYMERS® ELASTO-POXY PRIMER VOC**

- A. See Technical Data Sheet

## 2.07 DETAIL SEALANT - ERSYSTEMS® H.E.R.

- A. See Technical Data Sheet

## 2.08 FABRIC REINFORCEMENT - POLYESTER KNIT FABRIC

- A. See Technical Data Sheet

## 2.09 RELATED MATERIALS

- A. Gap/Joint Sealant: **PERMATHANE® SM7108**
- B. Gap/Joint Sealant: **ERSYSTEMS® 2100 MS ADHESIVE SEALANT**
- C. Gap/Joint Fabric: **Polyester Knit Fabric (TIE-TEX 272)**
- D. Metal Primer: **ERSYSTEMS® POLYURETHANE METAL RUST PRIMER** or **PACIFIC POLYMERS® ELASTO-POXY PRIMER VOC**
- E. **ERSYSTEMS® QUICKET**: Pourable self-leveling repair sealant. Quickly builds cricket and a pourable sealer.

**NOTE:** See Technical Data Sheet for additional information and detailed instruction on each product.

## PART 3 - APPLICATION

### 3.01 SUBSTRATE INSPECTION

- A. The concrete roof deck must be prepared properly for maximum adhesion and long service life.
- B. Cleaning of the concrete deck should be accomplished by pressure washing, grinding or shot blasting. A minimum pressure of 2500 psi must be maintained throughout the entire cleaning operation. Other means suitable to providing a clean dry concrete surface to be coated may be required. Power blasting to remove some debris may be required.
- C. Loose, cracked and peeling caulks and coatings shall be removed. Re-caulk cracks as necessary.
- E. Adhesion test is required to ensure sufficient adhesion will exist. To a representative and properly prepared area, apply ERSystems® POLYURETHANE 300 AROMATIC BASE COAT to the primed substrate in a 6" to 12" square and embed polyester fabric into the coating, leaving a 1" fabric tail. Let cure for 3 - 4 days and perform a 90° pull test on the fabric tail. Contact ITW Polymers Sealants North America Tech Service for details of adhesion test.

### 3.02 SURFACE PREPARATION & CLEANING

- A. Prepare the roof surface by high pressure washing with water at a pressure of 2,000 p.s.i. to 3,000 p.s.i. to remove dirt, miscellaneous soils, oily films, and the brown chalky residue which develops on the surface of many smooth Modified Bitumen membranes over time.
- B. Repair deteriorated flashing, cracks, and other surface imperfections with H.E.R., polyester fabric, and PERMATHANE® SM7108 or ERSYSTEMS® 2100 MS ADHESIVE SEALANT.
- C. Repair major substrate defects and replace with appropriate materials to provide a sound surface to which the coating may be applied.

- D. Repair and prepare incidental metal on the roof by priming with POLYURETHANE METAL RUST PRIMER or ELASTO-POXY PRIMER VOC.
- E. Take action to ensure proper drainage on the roof exists.

### 3.03 DRAINAGE

- A. Areas exhibiting a lack of positive drainage or ponding water will adversely affect performance of any roofing system and will be excluded from warranty. Where positive drainage does not exist, water removal from the roof surface must be facilitated by lowering drains and/or taking other corrective action. Additional maintenance inspections, repair work, the addition or use of primers and/or higher system mil-build may be required in these areas to extend coating life.

### 3.04 COATING APPLICATION: (Total dry mil minimums not acceptable uniformly over entire field)

- A. Cracks and static joints: For all cracks less than 1/16 " wide and non-moving joints, apply a prime coat of POLYURETHANE 300 AROMATIC BASE COAT at a rate of 35 wet mils.
- B. Elasto-Poxy® Primer VOC: To promote adhesion, apply Elasto-Poxy® Primer VOC at a rate of 1/3 to 1/2 gallon per square depending on substrate characteristics i.e. smooth vs. rough. Product is ready to coat when fingerprint impression is visible in epoxy. Approximately after 2-3 hour cure not to exceed 8 hours (See Epoxy Primer Datasheet)
- C. Option A – POLYURETHANE 300 ALIPHATIC FINISH COAT (White)

BASE COAT: POLYURETHANE 300 AROMATIC BASE COAT is applied to the properly prepared surface at the rate of approximately 2 gallons (7.57 liters) per 100 square feet in 2 passes. Allow to cure between coats. Rough and irregular surfaces may require a heavier application. POLYURETHANE 300 AROMATIC BASE COAT can be spray applied. Back rolling will assist in acquiring a uniform membrane thickness.

FINISH COAT: After allowing the first coat of POLYURETHANE 300 AROMATIC BASE COAT to cure, a finish coat of POLYURETHANE 300 ALIPHATIC FINISH COAT (White) is applied to the properly prepared surface at the rate of 1 gallon (3.79 liters) per 100 square feet in 1 pass. (total dry mil 38, minimum 35).

- D. Option B –Finish Coat Aluminum:

BASE COAT: POLYURETHANE 300 AROMATIC BASE COAT is applied to the properly prepared surface at the rate of approximately 2 gallons (7.57 liters) per 100 square feet in two passes. Rough and irregular surfaces may require a heavier application. The POLYURETHANE 300 Finish Coat can be spray applied in 2 passes at a minimum of 1 gallon (3.79 liters) per pass. Back rolling will assist in acquiring a uniform membrane thickness.

FINISH COAT: After allowing the POLYURETHANE 300 AROMATIC BASE COAT to cure, a finish coat of FINISH COAT ALUMINUM is applied at the rate of 1.5 gallons (5.68 liters) per 100 square feet in one or two passes, respectively (total dry mil: 41-, minimum 38). FINISH COAT ALUMINUM may be spray applied or rolled on perpendicular to the base coat application

- E. Granule application - Roofing granules shall be applied into a tack coat of Finish Coat. 35 - 40 pounds of No. 11 Roofing granules shall be immediately embedded into 0.5 - .75 gallons (1.89 – 2.84 liters) per 100 square feet of Finish Coat. Granule application should occur within 2 to 3 minutes of coating application and should be evenly distributed over the horizontal surface. Excess granules may be removed after the system has cured.
- F. Please Consult ITW POLYMERS SEALANTS NORTH AMERICA, INC. Technical Department for warranty requirements.

## **PROTECTION AND CLEAN-UP**

### **PROTECTION**

- A. The roof system and all components must be protected from all other trades at the job site.
- B. All damage to the system must be repaired to comply with ITW POLYMERS SEALANTS NORTH AMERICA, INC. guidelines prior to final inspection for warranty approval. The cost of all related repairs will be borne by the trades and/or subcontractors responsible for the damages.

### **CLEAN-UP**

- A. Site clean-up is the responsibility of the contractor.
- B. All debris, containers, materials, equipment, and protection materials must be removed from the premises and properly disposed of. All work and storage areas must be in an undamaged and acceptable condition upon completion of clean-up.