

## **MASTERSPEC**

### **BENEATH SLAB METHANE BARRIER**

#### **SECTION 07125 – COLD FLUID-APPLIED WATERPROOFING SYSTEM III PLUS**

##### **PART 1 – GENERAL**

###### **1. RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

###### **1. SUMMARY**

- A. This Section includes the following:

- 1. Substrate preparation.
- 2. Waterproofing membrane and methane barrier.
- 3. Seam Sealer and accessories.
- 4. Protection courses and methane barriers.

- A. Related Sections: The following Sections contain requirements that relate to this Section:

- 1. Division 2 Section "Earthwork", "Pipe Materials", "Sub-drainage systems".
- 2. Division 3 Section "Cast-in-Place Concrete" for concrete placement, curing, and finishing.
- 3. Division 5 Section "Expansion Joint Cover Assemblies", for expansion-joint covers assemblies and installation.

###### **1. PERFORMANCE REQUIREMENTS**

- A. General: Provide a methane barrier system that prevents the passage of methane gas and a waterproofing system that prevents the passage of liquid water under hydrostatic pressure and complies with physical requirements as demonstrated by testing performed by an independent testing agency of manufacturer's current waterproofing formulations and system design.

###### **1. SUBMITTALS**

- A. Submit Product Data for each type of methane barrier and waterproofing specified, including manufacturer's printed instructions for evaluating and preparing the substrate, technical data, and tested physical and performance properties.
- B. Project Data - Submit Shop Drawings showing locations and extent of methane barrier and waterproofing, including details for overlaps, sheet flashing, penetrations, and other termination conditions.
- C. Samples – Submit representative samples of the following for approval:

- 1. Methane barrier and waterproof membrane material.
- 2. Methane barrier and protection Course Material.

- A. Installer Certificates – Submit certificates signed by manufacturer certifying that Installers comply with requirements under the "Quality Assurance" Article.

#### 1. QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified in writing and approved by waterproofing manufacturer EPRO Services, Inc. for the installation of the SYSTEM III Plus Waterproofing System.
- B. Manufacturer Qualification: Obtain methane barrier and waterproofing materials and system components from a single manufacturer EPRO Services, Inc.
- C. Field Sample: Apply methane barrier and waterproofing system field sample to 100 sq./ft. (9.3 sq./m.) of field area demonstrate application, detailing, thickness, texture, and standard of workmanship.
  - 1. Notify Architect one week in advance of the dates and times when field sample will be prepared.
  - 2. If Architect determines that field sample, does not meet requirements, reapply field sample until field sample is approved.
  - 3. Retain and maintain approved field sample during construction in an undisturbed condition as a standard for judging the completed methane barrier and waterproofing. An undamaged field sample may become part of the completed Work.
- A. Pre-installation Conference: A pre-installation conference shall be held prior to application of the methane barrier and waterproofing system to assure proper site and installation conditions, to include contractor, applicator, architect/engineer and special inspector (if any).

## 1. DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site as specified by manufacturer labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.
- B. Store materials as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer. Protect stored materials from direct sunlight.
- C. Remove and replace material that cannot be applied within its stated shelf life.

## 1. PROJECT CONDITIONS

- A. Protect all adjacent areas not to be installed on. Where necessary, apply masking to prevent staining of surfaces to remain exposed wherever membrane abuts to other finish surfaces.
- B. Perform work only when existing and for-cast weather conditions are within manufacturer's recommendations for the material and application method used.
- C. Minimum clearance of 24 inches is required for application of product. For areas with less than 24-inch clearance, the membrane may be applied by hand using ECOLINE-R.
- D. Ambient temperature shall be within manufacturer's specifications. (Greater than +45°F/+7°C.)
- E. All plumbing, electrical, mechanical and structural items to be under or passing through the waterproof membrane shall be positively secured in their proper positions and appropriately protected prior to membrane application.
- F. Methane barrier and waterproof system shall be installed before placement of fill material and reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by General Contractor prior to membrane application.

## 1. WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents, and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by methane barrier/waterproofing manufacturer and Installer agreeing to repair or replace methane barrier/waterproofing that does not meet requirements or that does not remain methane free or watertight within the specified warranty period. Warranty does not include

failure of methane barrier/waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in the attached to structures that exceed 1/16 inch (1.6 mm) in width.

1. Warranty Period: 3 years after date of Substantial Completion.

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

- A. SYSTEM III Plus; EPRO Services, Inc., Wichita, KS, 800-882-1896

1. Spray-Applied ECOLINE-S or roller-applied ECOLINE-R.
2. Protection ECOSHIELD-E-15.

### 2.2 WATERPROOFING MATERIALS

- A. Fluid applied methane barrier/waterproofing system – ECOLINE-S; a single course, high build, polymer modified, asphalt emulsion. Waterborne and spray applied at ambient temperatures. A nominal thickness of 80 dry mils (60 mil minimum), unless specified otherwise. Non-toxic and odorless. ECOLINE-R has similar properties with greater viscosity and is roller or brush applied. Manufactured by EPRO Services, Inc.
- B. Fluid applied methane barrier/waterproofing physical properties.

#### ECOLINE-S – TYPICAL CURED PROPERTIES (MEMBRANE ONLY)

Tensile Strength	ASTM 412	32 psi
Elongation	ASTM 412	4140%
Resistance to Decay	ASTM E 154 Section 13	4% Perm Loss
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	.026 g/sq. ft. /hr.
Hydrostatic Water Pressure	ASTM D 751	26 psi
Perm rating	ASTM E 96 (US Perms)	0.21
Methane transmission rate	ASTM D 1434	0
Adhesion to Concrete & Masonry	ASTM C 836 & ASTM C 704	11 lbf./inch
Hardness	ASTM C 836	80
Crack Bridging	ASTM C 836	No Cracking
Low Temp. Flexibility	ASTM C 836-00	No Cracking at -20°C
Resistance to Acids:		
Acetic		30%
Sulfuric and Hydrochloric		13%
Temperature Effect:		
Stable		248°F
Flexible		13°F

## ECOLINE-R – TYPICAL CURED PROPERTIES

Tensile Strength	ASTM 412	32 psi
Elongation	ASTM 412	3860%
Resistance to Decay	ASTM E 154	9% Perm Loss
	Section 13	
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	.026 g/sq. ft. /hr.
Hydrostatic Water Pressure	ASTM D 751	28 psi
Perm rating (US Perms)	ASTM E 96	0.17
Methane transmission rate	ASTM D 1434	0
Adhesion to Concrete & Masonry	ASTM C 836	7 lbf./inch
Hardness	ASTM C 836	85
Crack Bridging	ASTM C 836	No Cracking
Low Temp. Flexibility	ASTM C 836-00	No Cracking at –20°C
Resistance to Acids:		
Acetic		30%
Sulfuric and Hydrochloric		13%
Temperature Effect:		
Stable		248°F
Flexible		13°F

### 2.3 AUXILIARY MATERIALS

- A. Sheet Flashing: 60-mil reinforced modified asphalt sheet good with double-sided adhesive.
- B. Reinforcing Strip: Manufacturer's recommended polypropylene and polyester fabric.
- C. Seam Detailing Sealant Mastic: ECOLINE-T or ECOLINE-R, a high or medium viscosity polymer modified water based asphalt material.

1. Back Rod: Closed-cell polyethylene foam.

### 2.4 METHANE BARRIERS AND PROTECTION COURSE

- A. Protection Course Usage
  1. On Base layer, use ECOSHIELD-E15 protection course or other protection as approved by the manufacturer.
  2. On Top layer, use ECOSHIELD-E15 or ECOSHIELD-E10: or other protection as approved by the manufacturer.

## A. ECOSHIELD physical properties.

		8-mil	10-mil	15-mil
Puncture Resistance	ASTM D 1709	475 g.	1593 g.	1898 g.
Tensile Strength	ASTM E 154	24.59 lbs. MD	34.6 lbs. MD	39.7 lbs. MD
Tear Resistance	ASTM E 96	N/A	5.98 lbs.	8.74 lbs.
Low Temperature Impact	ASTM D 1790	Resistant to -105 C	Resistant to -105 C	Resistant to -105 C
Water Vapor Trans. Rate	ASTM E 96	.00711 g./ft./hr.	.00621 g./ft./hr.	.00585 g./ft./hr.
Perm Rating	ASTM E 96	0.0143	0.0133	0.0123
Chemical or Environmental Resistance	ASTM	Excellent	Excellent	Excellent
Methane Gas Modified	ASTM D 1434	0	0	0

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions under which waterproofing systems will be applied, with Installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 SURFACE PREPARATION

- A. Verify substrate is prepared according to manufacturer's recommendations.
- B. Mask off adjoining surfaces not receiving methane barrier/waterproofing to prevent spillage or over spray affecting other construction.

### 3.3 PREPARATIONS AND TREATMENT AT TERMINATIONS AND PENETRATIONS

- A. Prepare vertical and horizontal surfaces at terminations, at penetrations through methane barrier/waterproofing materials to ASTM C 898 and manufacturer's recommendations.
- B. Apply two coats of ECOLINE-T on both sides of top and bottom protection course layers (30 mil each) and embed a joint reinforcing strip in preparation coat and apply a second coat over embedded joint reinforcing strip ensuring its complete saturation and covering.
  1. Terminations should be treated 6 inches up vertical and 6 inches on horizontal.
  2. Penetrations should be treated in a 6-inch radius around penetration and 3 inches onto penetrating object.

### 3.4 METHANE BARRIER/PROTECTION COURSE BOTTOM INSTALLATION

- A. Install ECOSHIELD-E15 over substrate material in one direction with six-inch overlaps
- B. Secure the ECOSHIELD-E15 seams by applying ECOSEAM-sealer between the overlapped sheets and ECOSHIELD tape on the seam.

### 3.5 METHANE BARRIER/WATERPROOFING APPLICATION

- A. Set up spray equipment according to manufacturer's instructions and place spray-markers in field of bottom protection course.
- B. Mix materials according to manufacturer's instructions.
- C. Start installing waterproofing in presence of manufacturer's technical representative.
- D. Apply methane barrier/waterproofing, according to manufacturer's recommendations, by spray (ECOLINE-S) or roller (ECOLINE-R).
- E. Apply one spray coat of ECOLINE-S or four roller coats of ECOLINE-R waterproofing to obtain a seamless membrane free of entrapped gases, with an average dry film thickness of 80 mils (1.5 mm) and a minimum dry film thickness of 60 mils (1.2 mm).
- F. Apply methane barrier/waterproofing to prepared wall terminations and to the horizontal surface of the bottom protection course to a thickness indicated by the placed spray-markers and according to manufacturer's recommendations and details.
- G. Verify film thickness of waterproofing every 100 sq./ft. (9.3 sq./m).

### 3.6 METHANE BARRIER/PROTECTION COURSE TOP INSTALLATION

- A. Install ECOSHIELD-E10 or E-15 protection course perpendicular to the direction of the bottom course with overlapped seams over nominally cured membrane no later than recommended by manufacturer and before starting subsequent construction operations.
- B. Secure ECOSHIELD-E10 protection course seams by applying ECOSEAM-sealer the overlapped sheets and ECOSHIELD Tape on the seam as recommended by manufacturer.

### 3.8 FIELD QUALITY CONTROL

- A. Membrane may be checked for coverage with a lightly oiled, needle nose depth gauge, taking four (4) readings over a one square inch area, every 500 square feet. Record the minimum reading. Mark the test area for repair.

- B. Test areas are to be patched over with ECOLINE-S to an 80 mil minimum dry thickness, extending a minimum of one inch (1") beyond the test perimeter.

### 3.9 CURING, PROTECTING, AND CLEANING

- A. Cure waterproofing according to manufacturer's recommendations, taking care to prevent contamination and damage during application stages and curing.
- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.