SECTION 07 27 26

VAPOR PERMEABLE FLUID-APPLIED AIR & WATER RESISTIVE BARRIER MEMBRANE SYSTEM

****

This guide specification has been prepared by Polyguard Products Inc., in electronic and printed media, as an aid to specifiers in preparing written construction documents for vapor permeable, fluid-applied air barrier membranes.

Polyguard® Airlok® STPE WRB Spray-N-Roll is a single-component, cold-applied, vapor permeable, Silyl Terminated Polyether (STPE) fluid. Typical applications include coating masonry, masonry cavity, poured and precast walls. Additional applications include plywood, oriented strand board (OSB), and exterior-grade gypsum sheathing which shall be covered with an exterior facade. Airlok® STPE WRB Spray-N-Roll is 90% Solids and < 20 g/l VOC content.

Edit entire master document to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences may contain choices to be made regarding inclusion or exclusion of a particular item or statement. This section may include performance-, proprietary-, and descriptive-type specifications. Edit to avoid conflicting requirements. Editor notes to guide the specifier are included between lines of asterisks to assist in choices to be made. Remove these editor notes before final printing of specification.

This guide specification is written around the Construction Specifications Institute (CSI) Section Format standards.

For specification assistance on specific product applications, please contact our offices above or any of our local product representatives throughout the country.

Polyguard Products Inc. reserves the right to modify these guide specifications at any time. Updates for this guide specification will be posted on the manufacturer's web site and/or in printed media as they occur. Manufacturer makes no expressed or implied warranties regarding content, errors, or omissions in the information presented.

****

PART 1 GENERAL

1.01SECTION INCLUDES

A. Surface preparation.

B. Application of liquid applied vapor permeable air & water resistive barrier system.

C. Materials for:

1. All penetrations through the wall assembly.

2. Connections to foundation walls.

3. Walls, windows, curtain walls, storefronts, louvers or doors.

4. Expansion and control joints.

5. Masonry ties.

6. Wall and roof connections and penetrations.

1.02 RELATED SECTIONS

****

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

****

A. Section 04 20 00 - Unit Masonry.

B. Section 07 21 00 - Thermal Insulation.

C. Section 07 50 00 - Membrane Roofing.

D. Section 07 60 00 - Flashing and Sheet Metal.

E. Section 07 70 00 - Roof and Wall Specialties and Accessories.

F. Section 07 80 00 - Fire and Smoke Protection.

G. Section 07 92 00 - Joint Sealants.

H. Section 08 10 00 - Doors and Frames.

I. Section 08 50 00 - Windows.

J. Section 09 20 00 - Plaster and Gypsum Board.

1.03 REFERENCES

A. AAMA 501.2 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

B. AATC 127-2008 – Standard test method measures for resistance of a fabric to the penetration of water under hydrostatic pressure.

C. ASTM C 1305 – Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane.

D. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

E. ASTM D 1004 – Acceptance Criteria for Tear Strength. Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.

F. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection – Section 7.9 Nail Sealability.

G. ASTM D 2240 – Hardness, Shore A Standard Test Method for Rubber Property—Durometer Hardness.

H. ASTM D 4541 - Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.

I. ASTM E 96 – Standard Test Method for Water Vapor Transmission of Materials.

J. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

K. ASTM E330/E330M – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

L. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

M. ASTM E 2178 – Standard Test Method for Air Permeance of Building Materials.

N. ASTM E 2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

O. NFPA 285 – Standard Test Method of determining the flammability characteristics of exterior, non-load bearing wall assemblies/panels.

1.04 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Submit manufacturer's product data and application instructions.

C. Sustainable Design Submittals:

1. Submit invoices and documentation from manufacturer of the amounts of materials and content for products specified.
2. Submit invoices and documentation showing manufacturing locations and origins of materials for products manufactured and sourced within 500 miles of project site.

D. LEED Submittal: Documentation of materials, recycled content and location of manufacturer.

1. LEED MR Credit 2 – Construction Waste Management: Provide documentation of reusable materials by weight and volume diverted back to manufacturing process or to appropriate sites.

2. LEED, MR Credit 5 – Regional Materials: Provide documentation for cost of materials or products that have been extracted, harvested, or recovered and also manufactured within 500 miles of project site.

a. If only a portion of the materials or products is extracted, harvested, or recovered and manufactured locally, then only provide percentage by weight for credit value.

3. LEED EA Credit 1 - Optimize Energy Performance: Provide documentation verification for materials increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Fluid-applied membrane must be manufactured by a company with a minimum of ten (10) years of experience in the production and sales of membrane materials.

B. Applicator Qualifications: A firm having at least three (3) years of experience in applying these types of specified materials and specifically accepted in writing by the membrane system manufacturer.

C. Materials: For each type of material required to complete the work of this section, provide primary materials which are the products of a single manufacturer.

D. Pre-Application Conference: A pre-application conference shall be held to establish procedures and to review conditions, installation procedures and coordination with other related work. Meeting agenda shall include review of special details and flashing.

E. Manufacturer’s Representative: Arrange to have trained representative of the manufacturer on-site periodically to review installation procedures.

1.06 MOCK-UPS

A. Prior to installation of the air barrier system, apply the system on a mock-up to verify details under shop drawing submittals and to demonstrate tie-ins with adjoining construction, and other termination conditions, as well as qualities of materials and execution.

B. Construct typical exterior wall panel, 6 feet long by 6 feet wide, incorporating back-up wall, cladding, window and door frame and sill, insulation, flashing; illustrating materials interface and seals.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store materials in a clean, dry area and on a stable surface with the lid securely closed in accordance with manufacturer's instructions and local governing regulations.

C. Store in ambient temperature range between -10°F (23°C) and 100°F (38°C). For best application results, store in ambient temperatures above 50^{o}F (11^{o}C).

D. Protect materials during handling and application to prevent damage or contamination.

E. Refer to Polyguard’s installation guide for more specific instructions.

1.08 PROJECT CONDITIONS

A. Proceed with installation only when substrate construction and preparation work is complete.

B. Warn personnel against breathing of vapors and contact with skin and eyes; also wear appropriate protective clothing and respiratory equipment if required per the product SDS document.

C. Maintain work area in a neat and workmanlike condition. Remove empty cartons and rubbish from the site daily.

1.09 WARRANTY

A. 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 recommended 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.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Polyguard Products Inc. P.O. Box 755 Ennis, TX 75120-0755; Phone: (214) 515-5000
Email: info@polyguard.com

2.02 MATERIALS

A. Polyguard® Airlok® STPE WRB Spray-N-Roll is a Silyl Terminated Polyether (STPE) fluid, vapor permeable membrane that forms a durable, continuous, bonded elastomeric barrier and combines the best of silicone and polyurethane properties.

1. Performance-based Specification: Air & water resistive barrier system shall be Silyl Terminated Polyether (STPE) based, fluid, vapor permeable, that cures to form a durable, continuous, bonded elastomeric membrane having the following properties:

POLYGUARD® AIRLOK® STPE AIR & WATER RESISTIVE BARRIER SYSTEM PHYSICAL PROPERTIES

PROPERTY	**TEST METHOD**	**TYPICAL VALUE**
COLOR		Gray
SERVICE TEMPERATURE RANGE		-25°F to 185°F
AIR PERMEANCE	ASTM E 2178	0.002 cfm/ft²
AIR LEAKAGE & DURABILITY	ASTM E 2357-11	0.0016 cfm/ft²
STRUCTURAL PERFORMANCE	ASTM E 330	Pass
AIR LEAKAGE	ASTM E 283	0.0011 cfm/ft²
WATER VAPOR PERMEANCE	ASTM E 96 Method B	15 perms
WATER PENETRATION	ASTM E 331	Pass
WATER INFILTRATION	AAMA 501.2-94	Pass
WATER RESISTANCE	AATC 127-2008	Pass
PULL ADHESION – GYPSUM SHEATHING	ASTM D 4541	≥ 41.2 PSI
PULL ADHESION - CONCRETE	ASTM D 4541	≥ 120 PSI
CRACK BRIDGING	ASTM C 1305	Pass
NAIL SEALABILITY	ASTM D 1970	Pass
TENSILE STRENGTH	ASTM D 412	100 PSI
HARDNESS, SHORE A	ASTM D 2240	45
ELONGATION	ASTM D 412	300%
TEAR STRENGTH	ASTM D 1004	60 PSI
EVALUATION OF FIRE PROPOGATION CHARACTERISTICS	NFPA 285	Compliant*
VOLATILE ORGANIC COMPOUNDS (VOC)		< 20 g/l

*Related to specific assemblies

2.03 SYSTEM ACCESSORIES

A. Flashing: Airlok® STPE WRB Flash-N-Roll:
Polyguard® Airlok® Flash-N-Roll is a single component, Silyl Terminated Polyether (STPE), 100% solid moisture-cured, elastomeric, roller-applied above-grade fluid flashing.

B. Flashing: Airlok® STPE WRB Gun-N-Spread:
Polyguard® Airlok® Gun-N-Spread is a single component, Silyl Terminated Polyether (STPE), 100% solid moisture-cured, elastomeric gun and trowel applied above-grade fluid flashing.

C. Flashing and Sealant: Detail Sealant PW™:
Polyguard® Detail Sealant PW™ is a single component, Silyl Terminated Polyether (STPE), 100% solid moisture-cured, elastomeric tube and trowel applied joint filler, sealant and fluid flashing.

D. Flashing and Sealant: Airlok® STPE WRB Detail-N-Joint:
Polyguard® Airlok® Detail-N-Joint is a single component, Silyl Terminated Polyether (STPE), 100% solid moisture-cured, elastomeric tube and trowel applied above grade fiber filled joint filler, sealant and transition fluid flashing.

E. Flashing: Polyguard® Airlok® Sheet 400 NP is a 40-mil, laminated, modified-asphalt, self-adhesive membrane bonded to a cross-laminated polyethylene sheet and is used for wall flashing, through-wall flashing (TWF), joint flashing, and non-vapor permeable sheet air barrier. Use Airlok® Sheet 400 NP for ambient and substrate surface temperatures 25°F (-4ºC) and rising. Airlok® Sheet 400 NP resists sunlight up to 30 days.

F. Flashing: Polyguard® Airlok® Sheet UV 400 NP is a 40-mil, composite membrane, consisting of a foil/polyscrim, laminated to a layer of rubberized-asphalt and is used for wall flashing, through-wall flashing (TWF), and joint flashing, and non-vapor permeable sheet air barrier. Use Airlok® Sheet UV 400 NP for ambient and substrate surface temperatures 25°F (-4ºC) and rising. Airlok® Sheet UV 400 NP resists sunlight up to 1 year.

G. Flashing: Polyguard® Airlok® Sheet UV Ultra 400 NP is a 40-mil, laminated, modified-asphalt, self-adhesive membrane bonded to a cross-laminated polyethylene sheet with a top protective layer of aluminum and is used for wall flashing, through-wall flashing (TWF), and joint flashing, and non-vapor permeable sheet air barrier. Use Airlok® Sheet UV Ultra 400 NP for ambient and substrate surface temperatures 40°F (5ºC) and rising. Airlok® Sheet UV Ultra 400 NP resists sunlight up to 2 years.

H. Flashing: Polyguard® Airlok® Sheet 200 BU/ NP is a 28-mil, laminated, butyl compound, self-adhesive, non-permeable sheet membrane bonded to a cross-laminated polyethylene sheet and is used for wall flashing, through-wall flashing (TWF), joint flashing, and non-vapor permeable sheet air barrier. Use Airlok® Sheet 200 BU/NP for ambient and substrate surface temperatures 20°F (-6ºC) and rising. Airlok® Sheet 200 BU/ NP resists sunlight up to 30 days.

I. Flashing: Polyguard® Airlok® Sheet UV 200 BU/NP is a 28 mil, laminated, butyl compound, self-adhesive, non-permeable sheet membrane bonded to a cross-laminated polyethylene sheet and is used for wall flashing, through-wall flashing (TWF), and joint flashing, and non-vapor permeable sheet air barrier. Use Airlok® Sheet UV 200 BU/NP for ambient and substrate surface temperatures 20°F (-6ºC) and rising. Airlok® Sheet UV 200 BU/NP resists sunlight up to 1 year.

J. Surface Primer Roller-Grade Adhesive:

1. Polyguard® 650 LT Liquid Adhesive: A rubber-based, tacky adhesive which is specifically formulated to provide excellent adhesion.

2. Polyguard® California Sealant: A rubber-based sealant which is specifically formulated to provide excellent adhesion. The VOC (Volatile Organic Compound) content meets the South Coast Air Quality Management District regulations established under the February 1, 1991 version of Rule 1168 ©) (2) Adhesion and Sealant Applications. California Sealant is classified as an Architectural Sealant Primer Porous, with VOC of 527 g/L. Current SCAQMD regulations for this type sealant primer are 775 g/L.

PART 3 EXECUTION

3.01 EXAMINATION

A. All substrates to be treated must be clean, structurally sound and free of dirt, excess mortar, or other contaminants. Damp substrates must be clear of detectable surface water, frost, ice or snow. Masonry substrate shall have tooled mortar joints.

B. Cutouts and breakouts for support columns and beams are to be filled and made flush with the substrate by others prior to commencing work.

C. Masonry and new concrete shall have been cured a minimum of three (3) days and can be damp at time of application.

D. Design Professional to verify substrate and conditions are acceptable to commence work within this section. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

A. Apply to clean, structurally sound and dust free substrate joints and surfaces. Airlok® STPE WRB Spray-N-Roll system components can be applied to damp surfaces clear of detectable surface water, frost, ice or snow.

B. Knock off concrete wall form ties. Fill flush with Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ installed per the Airlok® STPE WRB Installation Guide and the standard details; or fill with non-shrinking Portland cement grout, installed per the manufacturer's instructions. Allow Airlok® STPE WRB Detail-N-Joint and/or Detail Sealant PW™ a minimum of 1 hour to skin over before covering, adding additional time for lower or more arid ambient and surface temperatures.

C. Leave CMU wall unparged.

D. Fill voids in concrete or exterior gypsum sheathing to flush with the substrate by using Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™.

E. Use backer rod in joints in excess of 1/4-inch and a tooled bead of Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™. Joints 1/4-inch or less can be coated with Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ without additional preparation.

F. Refer to the Airlok® STPE WRB Installation Guide and the standard details for additional instructions.

3.03 APPLICATION OF THE STPE AIR & WATER RESISTIVE BARRIER SYSTEM

A. Apply the Airlok® STPE WRB Spray-N-Roll system components following the Airlok® STPE WRB Installation Guide.

B. Accessory products (above) can be installed either before or after the fluid-applied application of Polyguard® Airlok® STPE WRB Spray-N-Roll to substrate. For ambient and substrate temperatures between 25°F (-4°C) and 40°F (5°C), refer to the Airlok® STPE WRB Installation Guide.

C. Apply Airlok® STPE WRB Spray-N-Roll in one coat; by means of a sprayer, roller, or brush; to achieve a continuous film at the desired 20 mils dry apply at a theoretical coverage rate of 69 square feet per gallon (23 wet mils). Additional material may be necessary on rougher or more porous substrates.

D. Apply Airlok® STPE WRB Spray-N-Roll over rough openings.

E. Apply extra material at anchor ties to achieve additional membrane thickness.

F. Allow application to dry for six (6) hours, maintaining a minimum temperature of 40°F (5ºC). Inspect for continuous coverage. If necessary, apply additional material as needed to ensure complete coverage.

G. Application at transition joints:

1. Detailing can be performed before or after the application of other Airlok® STPE WRB system components. If detailing is performed before the field or flashing application, then allow the Airlok® STPE WRB Detail-N-Joint to skin over before applying other Airlok® STPE WRB Spray-N-Roll system components.

2. Prime the cut edges of gypsum sheathing with either Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant and let it flash off to become tacky.

3. Apply Airlok® STPE WRB Detail-N-Joint as a cove bead in corner joints and tool to a minimum 1/2-inch radius.

4. Install a backer rod in transition joints larger than 1/4-inch. Fill joints with Detail Sealant PW™ and tool.

5. Apply Airlok® STPE WRB Detail-N-Joint at least 3 inches onto the wall surfaces on either side of the joint at a rate of 60 mils.

   a. Or, apply either of the Airlok® STPE WRB Spray-N-Roll system components at least 3-inches onto the wall surfaces on either side of the joint at a rate of 25 mils. Then follow Polyguard® sheet flashing installation instructions.

   b. Or, apply one of Polyguard's primer/adhesives and allow it to flash off to become tacky. Follow Polyguard® sheet flashing installation instructions.

H. Application at rough fenestration openings:

1. Prime the cut edges of gypsum sheathing with either Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant and let it flash off to become tacky.

2. Fill joints with Airlok® STPE WRB Detail-N-Joint.

3. Apply a 3/8-inch cant / fillet bead to the rough opening corners.

4. Apply either of the Airlok® STPE WRB Flash-N-Roll, Airlok® STPE WRB Gun-N-Spread, Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ at least 3-inches onto the wall structure face out from the rough opening and at least 3-inches onto the rough opening surface inward.

   a. Or, apply one of Polyguard's primer/adhesives and allow it to flash off to become tacky. Follow Polyguard® sheet flashing installation instructions to apply the sheet flashing to the rough opening.

I. Application at penetrations:

1. Scuff and clean the penetration with denatured alcohol.

2. Install backer rod in joints larger than 1/4-inch. Fill joints with Detail Sealant PW™.

3. Apply a 1/2-inch cant / fillet bead of either with Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™.

4. Apply and trowel Airlok® STPE WRB Flash-N-Roll, Airlok® STPE WRB Gun-N-Spread, Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ least 3-inches onto the wall surface and at least 3-inches onto and around the penetration.

J. Application at board joints:

1. Detailing can be performed before or after the application of other Airlok® STPE WRB Spray-N-Roll system components. If detailing is performed before the field or flashing application, then allow the Airlok® STPE WRB Detail-N-Joint to skin over before applying other Airlok® STPE WRB Spray-N-Roll system components.

2. Prime the cut edges of gypsum sheathing with either Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant and let it flash off to become tacky.

3. For joints larger than 3/16”, fill joints with Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ and tool.

4. Apply and trowel Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ to board joints up to 1/4-inch as a 2-inch wide detail stripe centered over the joint with a nominal tooled surface thickness of 25 mils.

K. Application at expansion joints up to 1-inch wide:

1. Install backer rod in joint larger than 1/4-inch. Fill joints with Airlok® STPE WRB Detail-N-Joint and tool.

2. Apply either of the Airlok® STPE WRB Flash-N-Roll, Airlok® STPE WRB Gun-N-Spread Airlok® STPE WRB Detail-N-Joint or Detail Sealant PW™ at least 3-inches onto the wall surfaces on either side of the joint at a rate of 25 mils.

L. Refer to Polyguard’s installation guide for more specific instructions.

3.03 PROTECTION

A. Protect finished air barrier system in a manner that prevents damage from adjacent work.

B. If the membrane is exposed to UV for 6 months, contact Polyguard for additional instructions.

END OF SECTION