

SPEC WRITERS NOTE: This specification includes materials and installation procedures for SlopeShield® PLUS Self-Adhered a Self-Adhered Water-Resistive, Vapor Permeable, Air Barrier Roofing Underlayment used as an Air Barrier and secondary rain barrier under steep sloped roofing systems, 2:12 (9.46 degrees), or steeper. With a vapor permeance rating of ≥30 perms SlopeShield® PLUS Self-Adhered Vapor Permeable Roof Underlayment stops water intrusion and allows the roof assembly to breathe or 'dry-out' through Vapor Diffusion. This guide specification should be adapted to suit the requirements of individual projects. It is prepared in CSI Master Format and should be included as a separate section under Division 7 - Thermal and Moisture Protection.

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work and coordinate overlapping Work.

1.02 SYSTEM DESCRIPTION

- A. Supply labor, materials and equipment for the installation of a fully adhered water-resistive vapor permeable, air barrier roof underlayment membrane.
- B. Complete Work as shown on the Drawings and specified herein to bridge gaps and seal the water-resistive, vapor permeable, air barrier roof underlayment membrane against water intrusion.
- C. Install fully self-adhered, water-resistive, vapor permeable, air barrier roof underlayment membrane, complete with perimeter flashings and Ice and Water Guard material in locations required by code. Lap all components in a shingle fashion to shed water per best roofing practice.

1.03 RELATED SECTIONS

- A. Related Sections may include the following:
1. Division 6: Rough Carpentry
 2. Division 7: Clay Tile Roofing Systems
 3. Division 7: Wood Shakes and Shingles Roofing Systems
 4. Division 7: Pre-Finished Metal Roofing Systems
 5. Division 13: Pre-Engineered Buildings for metal siding and roofing

1.04 REFERENCE STANDARDS

- A. ASTM International (ASTM):
1. ASTM D5034 – Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
 2. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.
 3. ASTM E398 Standard Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement.
 4. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
 5. ASTM D1970 / D7349 - Standard Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal around Fasteners.
 6. ASTM D4869 – Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing
 7. ASTM D3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
 8. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- B. International Code Council Evaluation Service, Inc. (ICC-ES): ICC-ES AC48 - Acceptance Criteria for Self-adhered Roof Underlayments for Use as Ice Barriers.

1.05 SUBMITTALS

- A. Submit manufacturer's current product data sheets, details and installation instructions for the Self-Adhered, water-resistive, vapor permeable, air barrier roof underlayment membrane components and accessories.
- B. Submit samples of the following:
1. Manufacturer's sample 20 year warranty
 2. 3 each SlopeShield PLUS Self-Adhered Material Samples, 12 in. x 12 in. (30.5 cm x 30.5 cm)
 3. 3 each SlopeFlashing™ Samples, 12 in. x 12 in. (30.5 cm x 30.5 cm)

4. VaproLiqui-Flash™, 1 sausage
5. VaproBond™, 1 sausage
6. 3 each VaproShim SA™ Self-Adhered, 3 mm (1/8 in.), 1 in. x 4 in. (2.5 cm x 10.1 cm)
7. 3 each VaproShim SA™ Self-Adhered, 7 mm (1/4 in.), 1 in. x 4 in. (2.5 cm x 10.1 cm)
8. 3 each VaproMat™ 3 mm (1/8 in.), 12 in. x 12 in. (30.5 cm x 30.5 cm)
9. 3 each VaproMat™ 7 mm, (1/4 in.) 12 in. x 12 in. (30.5 cm x 30.5 cm)

1.06 QUALITY ASSURANCE

- A. Single Source: Fully self-adhered water-resistive vapor permeable roof underlayment membrane components and accessories must be obtained as a single-source membrane system to ensure total system compatibility and integrity.
- B. Manufacturer Qualifications
 1. Manufacturer of specified products listed in this Section to have minimum 10 years of continued experience in the manufacture and supply of water-resistive vapor permeable roof underlayment membrane products successfully installed in similar project applications.
 2. Manufacturer of specified products listed in this Section to have experienced in-house technical and field observation personnel qualified to provide expert technical support.

1.07 PRE-INSTALLATION CONFERENCE

- A. Contractor shall convene [one] week prior to commencing work of this section, under provisions of Section 01 31 19 – Project Meetings.
- B. Ensure all contractors responsible for creating a continuous plane of water tightness are present.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Refer to current Product Installation Instructions at www.vaproshield.com for proper storage and handling.
- B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- C. Store roll materials on end in original packaging. Protect rolls from direct sunlight and inclement weather until ready for use.
- D. Wasted Management and Disposal
 1. Separate and recycle waste materials in accordance with Section [01355 - Waste Management and Disposal], and with the Waste Reduction Work Plan.

1.09 ALTERNATES

- A. Submit request for alternates in accordance with Section 01 25 00 – Substitution Procedures.
- B. Submit requests for alternates a minimum of ten (10) working days prior to bid date.
- C. Alternate submission to include:
 1. Evidence that alternate materials meet or exceed performance characteristics of specified product requirements including documentation from an approved independent testing laboratory certifying the minimum physical dimensions, tensile strength, fire burning characteristics, vapor permeance and air leakage rates of the fully self-adhered (not-spot applied adhesive) water-resistive vapor permeable air barrier roofing underlayment without the aid of primers or surface conditioners.
 2. Manufacturer's complete set of details for fully self-adhered water-resistive vapor permeable roof underlayment membrane system.
 3. Manufacturer of alternate materials has experienced in-house technical and field observation personnel qualified to provide expert technical support.
- D. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to bid date shall not be permitted for use on this project.

SPEC WRITERS NOTE: SlopeShield PLUS Self-Adhered will remain stable for up to 180 Days (6 months) of direct UV exposure. However, SlopeShield PLUS Self-Adhered is not intended to be the primary liquid water hold out system or temporary roof covering to remain watertight when exposed to extreme weather conditions. It is always recommended to cover SlopeShield PLUS Self-Adhered with permanent roof cladding as soon as practical.

1.10 WARRANTY

- A. Provide manufacturer's standard material warranty in which manufacturer agrees to provide replacement material for fully self-adhered water-resistive vapor permeable roof underlayment sheets installed in accordance with manufacturer's instructions that fails due to material defects within 20 years from the date of purchase.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Primary fully self-adhered water-resistive vapor permeable roof underlayment membrane, components and accessories must be obtained as a single-source to ensure total system compatibility and integrity.
1. Self-adhered water-resistive vapor permeable roof underlayment membrane by VaproShield LLC., Gig Harbor, WA, Phone: (866) 731-7663, Email: info@VaproShield.com, Website: www.vaproshield.com.
- B. Fully self-adhered water-resistive vapor permeable roof underlayment (Basis of Design)
1. Primary fully self-adhered roof underlayment membrane shall be SlopeShield PLUS Self-Adhered Water-Resistive Roof Underlayment by VaproShield, a fully adhered vapor permeable water-resistive sheet membrane consisting of multiple layers of UV stabilized spun-bonded polyethylene having the following properties:
 - a. Color: Black with White Lettering with allowable UV exposure for 180 days (6 Months).
 - b. Adhesive: 100% coverage on back side of membrane (not spot applied), vapor permeable, with zero VOC's.
 - c. High temperature resistance up to 250 °F (121 °C)
 - d. Air Leakage: 0.00086 cfm/ft² @ 1.57 psf (0.00437 L/s•m² @ 75 Pa) when tested in accordance with ASTM E2178.
 - e. Water Vapor Permeance tested to ASTM E398 and ASTM E96 water method @23°C 50%RH: minimum of 30 perms grain/h•ft²•inchHg (1716 ng/Pa • s • m²)
 - f. Water Resistance tested (Ponding): AC48, 24 inches (610 mm) 48 hours, Pass, no leakage
 - g. Tensile Strength tested to ASTM D5034: Pass, 135 lbf/in. (23.6 N/mm), machine direction; 113 lbf/in. (19.8 N/mm), cross-machine direction
 - h. Application Temperature: Ambient temperature must be above 20°F (minus 6.7°C).
 - i. Physical Dimensions: 0.02 in. (0.51 mm) thick 59 in. (1.5 m) wide by 102 ft. (31.1 m) and 1.46 oz/ft² (449 g/m²).
 - j. Liquid Water Transmission to ASTM D4869: Pass
 - k. Fastener Pull-through Resistance: ASTM D3462 – Pass
 - l. Nail Sealability: ASTM D1970 / D7349 - Pass
 - m. Surface Burning Characteristics: ASTM E84 Flame Spread Index 5, Smoke Developed Index 45
- C. WATER-RESISTIVE VAPOR PERMEABLE TRANSITION AND FLASHING MEMBRANE
1. Self-adhered underlayment flashing membrane shall be SlopeFlashing™ by VaproShield, a fully self-adhered vapor permeable water-resistive sheet membrane having properties equal to the primary self-adhered water resistive air barrier roofing underlayment membrane.
 - a. SlopeFlashing is available in the following sizes:
 - Roll Size: 19 2/3 in. x 102 ft. (500 mm x 31 m), 167 ft² (15.5 m²)
 - Roll Size 29.5 in. x 102 ft. (749 mm x 31 m), 255 ft² (23 m²)

SPEC WRITERS NOTE: Enhanced drainage and ventilation can be achieved with the following accessories, provided the final roofing material chosen is designed to accept these accessories. Contact the VaproShield Technical Department for assistance in choosing the appropriate accessories for the roofing materials specified.

2. Water-resistive weather drainage and ventilation accessories by VaproShield.
 - a. VaproShim SA™ Self-Adhered Neoprene/EPDM accessory used under horizontal cladding attachment components to create an unimpeded drainage vertical drainage plane for roofing, while sealing fastener penetrations.
 - b. VaproMat™ Lightweight, hydrophobic filter fabric with a 3 mm (1/8 in.) or 7 mm (1/4 in.) polypropylene drainage matrix attached, designed to maintain a drainage cavity under roofing material, promoting rapid drying.

2.02 PENETRATION SEALANT

- A. Provide sealant for penetrations as recommended by manufacturer and as specified under Division 07 Section: Sealants. Appropriate sealants shall be VaproLiqui-Flash™ or VaproBond™ by VaproShield LLC.

PART 3 EXECUTION

3.01 GENERAL

- A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify [engineer] [architect] [consultant] in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates.
- B. All surfaces must be dry, sound, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the fully self-adhered roof underlayment membrane. Fill voids and gaps greater than ½ inch (12.7 mm) in width, in substrate to provide an even surface.
- C. Ensure all preparatory work, including installation of mechanical and electrical penetrations and fixtures are complete and secured in-place prior to applying fully self-adhered roof underlayment membrane.
- D. Install per manufacturer's most current published installation instructions available at time of installation.

3.02 FIELD QUALITY CONTROL

- A. [Owner will engage] [Engage] an independent inspector to observe substrate and installation. Inspector shall provide a written, sign-off log, on all penetrations through underlayment prior to installation of final roofing material. Form of log shall be approved by Architect before contract with inspection service is approved.

3.03 PROTECTING AND CLEANING

- A. Protect completed installations of fully self-adhered water-resistive roof underlayment membrane from damage due to extreme weather conditions, physical abuse and other subtrades.
- B. Cover membrane as soon as practical.
- C. Repair damaged water-resistive roof underlayment membrane. Measure and pre-cut roof underlayment membrane to cover damaged area with minimum 12 in. (30.5 cm) overlap to the sides and bottom. Roll membrane to ensure positive contact. Provide VaproBond over exposed leading edge of membrane terminations.
- D. Remove and replace roof underlayment membrane affected by chemical spills or surfactants.

END OF SECTION