

FLUID APPLIED VAPOR PERMEABLE AIR BARRIER AP-650 VP

Note: This specification includes materials and installation procedures for AP-650 VP, an elastomeric fluid applied vapor permeable, mold resistive, air barrier membrane meeting the requirements of ABAA S0008 Code for the building envelope. This specification is provided as a guideline and must be modified, as required, by the Designer of Record for each project.

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.
- B. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

1.02 DESCRIPTION

- A. Supply labour, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
 - 1. Connections of the walls to the roof air barrier
 - 2. Connections of the walls to the foundations
 - 3. Seismic and expansion joints
 - 4. Openings and penetrations in the building envelope
 - 5. Piping, conduit, duct and similar penetrations.
 - 6. Masonry ties, screws, bolts and similar penetrations.
 - 7. All other air leakage pathways in the building envelope.
- B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.
- C. Materials and installation methods of through-wall flashing membranes.

1.03 REFERENCES

- A. The following standards are applicable to this section:
 - 1. ABAA T0001, Standard Test Method for Building Enclosure Airtightness Compliance Testing
 - 2. ABAA T0002, Standard Test Method for Pull-Off Strength of Adhered Air and Water-Resistive Barriers Using an Adhesion Tester
 - 3. ABAA T0004, Standard Test Method for Determining Gap Bridging Ability of Air and Water-Resistive Barrier Materials
 - 4. ASTM C794-18, Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
 - 5. ASTM C1338-15, Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
 - 6. ASTM C1498-04a (Reapproved 2016), Standard Test Method for Hygroscopic Sorption Isotherms of Building Material
 - 7. ASTM D412-16, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
 - 8. ASTM D522/D522M - 17, Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
 - 9. ASTM D543-14, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
 - 10. ASTM D2247-15, Standard Practice for Testing Water-Resistance of Coatings in 100% Relative Humidity
 - 11. ASTM E84-19b, Standard Test Method for Surface Burning Characteristics of Building Materials
 - 12. ASTM E96-16, Standard Test Methods for Water Vapor Transmission of Materials
 - 13. ASTM E2178-13, Standard Test Method for Air Permeance of Building Materials
 - 14. ASTM E2357-18, Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies
 - 15. ASTM E2485/E2485M-13 (2018), Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water-Resistive Barrier Coatings
 - 16. EPA Method 24—Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings

1.04 SUBMITTALS

- A. Technical Data Sheet: Submit manufacturers' current technical data sheet for the air barrier membrane.
- B. Safety Data Sheet: Submit manufacturers' current safety data sheet for the air barrier membrane.
- C. Test Reports: Submit test reports showing that air barrier membrane meets the requirements of the ABAA S0008 Code

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacture shall have 20 years of experience manufacturing roofing, waterproofing, vapor barriers, air barriers and related building enclosure materials.
- B. Applicator Qualifications:
 - 1. Submit document stating the applicator of the primary air/vapor barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.
 - 2. Applicator experienced in applying air barrier materials similar in material, design and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.
 - 3. Knowledgeable in the proper use and handling of specified wall systems products.
 - 4. Employ skilled, trained installers who are experienced and knowledgeable in air/water resistive barrier application, and familiar with the requirements of the specified work.
 - 5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with the specified wall system manufacturer's published requirements.
- C. Perform Work in accordance with manufacturer's written instructions and this specification.
- D. Maintain one copy of manufacturer's written instructions on site.
- E. Allow access to Work site by the air barrier membrane manufacturer's representative.
- F. Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.
- G. Single-Source Responsibility: Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
- H. Regulatory Requirements: Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

1.06 MOCK-UP

- A. Before beginning installation of air/water-resistive barrier, provide mock-ups incorporating backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.
- B. Coordinate construction of mock-up to permit inspection by Owner's testing agency of air barrier before external insulation and cladding is installed.
- C. If designer determines mock-ups do not comply with project requirements, reconstruct mock-ups, and apply air barrier until mock-ups are approved by the Designer.
- D. Allow 48 hours for inspection of mock-up by [engineer] [architect] [consultant] before proceeding with air barrier work. Mock-up may remain as part of the work.

1.07 PRE-INSTALLATION CONFERENCE

- A. A pre-installation conference shall be held prior to commencement of work to establish procedures to maintain optimum working conditions and to coordinate the specified work with related and adjacent work. Pre-installation conference shall include the Designer, General Contractor and Applicator. Agenda for meeting shall include but not be limited to the following:
 - 1. Review of submittals.
 - 2. Review of surface preparation, minimum curing period and installation procedures.
 - 3. Review of special details and flashings.
 - 4. Sequence of construction, responsibilities, and schedule for subsequent operations.
 - 5. Review of mock-up requirements.
 - 6. Review of inspection, testing, protection, and repair procedures.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Refer to current Product MSDS or TDS 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 materials in their unopened, original packaging in a dry, well-vented, weatherproof location protected from damaging exposures, direct sunlight, and extreme heat.
- D. Store air barrier membranes, adhesives, and primers at temperatures of 55°F or above.
- E. Contractor to verify compliance for Volatile Organic Compounds (VOC) limitations of products to comply with all federal, state, and local regulations controlling use of volatile organic compounds (VOCs).
- F. Properly dispose of all pails, product wrappers, pallets, cardboard tubes, scrap, waste, and debris. All damaged materials shall be removed from job site and replaced with new, suitable materials.

1.09 COORDINATION

- A. Ensure continuity of the air seal throughout the scope of this section.

1.10 SITE CONDITIONS

A. SAFETY:

1. The applicator shall be responsible for complying with all project-related safety and environmental requirements.
2. The applicator shall review project conditions and determine when and where conditions are appropriate to utilize the specified materials. When conditions are determined by the applicator to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
3. The applicator shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

B. ENVIRONMENTAL CONDITIONS:

1. Do not apply materials in ambient temperatures below 55°F; material temperature must be maintained at 55°F during installation. Provide properly vented, supplementary heat during installation and drying period when temperatures less than 25°F prevail.
2. Do not apply materials to frozen or frost covered surfaces.
3. Maintain ambient temperature at or above 55°F during application of all materials and until dry.
4. Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
5. Precipitation and dew point: Monitor weather to ensure the project environment is dry before, and will remain dry, during the application of materials. Ensure all materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.

1.11 WARRANTY

- A. Provide manufacturer's standard 10-year material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. Air/vapor barrier membrane components and accessories must be obtained as a single source from the membrane manufacturer to ensure total system compatibility and integrity.
- B. Comply with the Manufacturer's requirements as necessary to provide the specified warranty.
- C. Acceptable Manufacturer:
 - Gardner Gibson
 - 4701 E. 7th Ave.
 - Tampa, FL 33605
 - 813-367-4444
 - www.icpgroup.com

2.02 MEMBRANES

- A. Primary liquid applied vapor permeable air barrier membrane for temperatures above 55°F shall be AP-650 VP manufactured by Gardner Gibson; a one component elastomeric membrane, brush or spray applied, compatibility with substrates, transition membranes and insulation.

- B. Fluid-applied, vapor-permeable air/water-resistive barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge water and incidental condensation to the exterior.
- C. At wall cladding transitions, the air/water-resistive barrier shall form a continuous air barrier and shall make provision for water drainage, either by creation of an unobstructed drainage plane that extends across the cladding transition or by flashing to discharge to the exterior at the transition.
- D. Air barrier assemblies shall be capable of accommodating substrate movement and sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits, or interruption of the drainage plane.
- E. Membrane shall have the following physical properties:
 - 1. Meets the requirements of ABAA S0008 Code for the building envelope.
 - 2. Air Leakage Rate (Assembly): 0.002 cfm/ft² per ASTM E2357
 - 3. Air Leakage Rate (Material): <0.0001 cfm/ft² at 1.57 lbs/ft² per ASTM E2178
 - 4. Air Leakage Rate (Fastener): 0.001 cfm/ft² at 1.57 lbs/ft² per ASTM E2178 modified by ABAA
 - 5. Alkali Resistance: No Deleterious effect seen when tested according to ASTM D543 Practice A, Procedure 1
 - 6. Elongation: 340% Elongation per ASTM D412 Method A, Die C
 - 7. Freeze-Thaw Resistance: No visual surface changes observed when tested according to ASTM E2485 Method A
 - 8. Fungi Resistance: Rating 1 - No fungal growth when tested according to ASTM C1338
 - 9. Gap Bridging: No Cracks, Splits or Pinholes observed when tested according to ABAA T0004
 - 10. Low Temperature Flexibility: No surface changes seen when tested according to ASTM D522 Method B
 - 11. Peel Adhesion: > 5 lb/in for OSB, CMU, Gypsum per ASTM C794
 - 12. Pull Adhesion: > 16 psi for OSB, CMU, Gypsum per ABAA T0002
 - 13. Flame Spread Index: 5 per ASTM E84
 - 14. Smoke Development Index: 5 per ASTM E84
 - 15. Volatile Organic Compounds: 1.11% per EPA 24
 - 16. Water Vapor Absorption: 0% at 30% RH, 1% at 65% RH, 6% at 97% RH per ASTM C1498
 - 17. Water Resistance: No surface changes seen when tested according to ASTM D2247
 - 18. Water Vapor Transmission Rate: 1.4 Perms Method A, 35.0 Perms Method B per ASTM E96

2.03 AUXILIARY MATERIALS

- A. Adhesive/Sealant/Flashing Compound – APOC 264 Elastomeric Patching Compound
- B. Sealant Tape – APOC Incredible All-Purpose Tape

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examination includes visual observations, qualitative analysis, and quantitative testing measures as necessary to ensure conditions remain satisfactory throughout the project.
- B. Verify that surfaces and conditions are ready to accept the Work of this section. Notify engineer, architect and consultant in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.
- C. All surfaces must be sound, flat, dry, clean, and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
- D. Verify concrete is sufficiently cured, visibly dry and free of moisture.
- E. Examine conditions by conducting preliminary qualitative peel tests as necessary to ensure satisfactory adhesion.
- F. The applicator shall examine all substrates including, but not limited to: wall sheathing, penetrations, terminations, transitions and fixtures. During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified fluid applied air/water-resistive barrier and associated work.
- G. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.
- H. Condition materials to room temperature prior to application to facilitate handling.

3.02 SURFACE PREPARATION

- A. Before commencing work each day, the applicator shall prepare all substrates to ensure conditions are satisfactory to proceed with the installation of specified materials. Preparation of substrates

includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.

- B. Protect all surrounding areas and surfaces from damage and staining during application of air/water-resistive barrier.
- C. Report all unsatisfactory conditions to the General Contractor. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate applicator's acceptance of conditions.
- D. Ensure all preparatory Work is complete prior to applying primary air barrier membrane.

3.03 INSTALLATION OF AIR VAPOR BARRIER SYSTEM

A. JOINT TREATMENT

- 1. Seal the joints ¼ inch and less between panels of exterior grade gypsum sheathing, plywood, OSB or cementitious panels by filling with APOC 264 Elastomeric Patching Compound ensuring contact with all edges of sheathing board. Strike flush any excess sealant over joint layer to form a continuous layer over the joint.
- 2. If gap is more than ¼ inch than apply a strip of APOC Incredible All-Purpose Tape lapped a minimum of 1.5 inches on both sides of the joint after sealing the gaps/voids/irregular joints with APOC 264 Elastomeric Patching Compound. Roll all laps and tape with a countertop roller to ensure seal.

B. INSIDE AND OUTSIDE CORNERS

- 1. Seal inside and outside corners of sheathing boards with a strip of APOC Incredible All-Purpose Tape extending a minimum of 3 inches on either side of the corner detail. Roll all laps and tape with a countertop roller to ensure seal.

C. CRACK TREATMENT – MASONRY AND CONCRETE

- 1. Seal cracks over 1/8 inches in masonry and concrete by filling with APOC 264 Elastomeric Patching Compound ensuring contact with all edges. Strike flush any excess sealant over to form a continuous layer over the crack.
- 2. Alternately, static cracks 1/8 inch and less can be sealed with primary air and moisture barrier membrane. Allow to dry prior to application of primary air and moisture barrier membrane.

D. LIQUID-APPLIED FLASHING OPTION

- 1. Use for door and window openings, MEP penetrations and dissimilar material connections.
 - i. Apply liquid flashing to all material joints and tool smooth.
 - ii. Apply liquid flashing in a serpentine fashion to the entire window opening and tool smooth to a minimum 25 mils wet film thickness. Spread material to cover the inside of rough openings and extend 4 inches onto adjacent surfaces. Create a slight positive slope towards the exterior of sill conditions by applying more material to the interior side of sills to create a taper towards the exterior while maintaining a minimum 25 mils wet film thickness.
 - iii. Apply liquid flashing to MEP penetrations with a maximum of ½ inch annular space. Extend liquid flashing a minimum 4 inches onto penetrating item and surrounding surfaces to a minimum of 25 mils dry film thickness.
 - iv. Apply liquid flashing to inside/outside corners and dissimilar material connections. Extend a minimum 4 inches onto adjacent surfaces a minimum of 4 inches and a minimum wet film thickness of 25 mils dry film thickness.
 - v. Apply fluid-applied air and moisture barrier membrane onto liquid flashing a minimum of 2 inches.

E. TRANSITION AREAS

- 1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with APOC Incredible All-Purpose Tape. Provide minimum 3-inch lap to all substrates. Roll all laps and tape with a countertop roller to ensure seal.

Spec Note: Best construction practice requires windowsill details to be waterproofed and flashed prior to the placement of the window assembly. SBS modified self-adhering membranes provide the flexibility to wrap around the configurations of wall openings and provide the self-sealing properties to guard against leaks by mechanical fastener attachment.

Spec Note: Specific window manufacturer's instructions over-ride Gardner Gibson specifications for window openings. The installer is responsible to resolve any conflicts in the specifications, sequencing, materials or techniques between window manufacturer's instructions and Gardner Gibson specifications BEFORE CONSTRUCTION.

F. WINDOWS AND ROUGH OPENINGS

1. Wrap rough openings with APOC Incredible All-Purpose Tape. Provide minimum 3-inch lap to all substrates. Roll all laps and tape with a countertop roller to ensue seal.

G. THROUGH-WALL FLASHING MEMBRANE

1. Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.
 - i. Prime surfaces and allow to dry, press membrane firmly into place, overlap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
 - ii. Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the back-up wall.
 - iii. Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.
 - iv. Install through-wall flashing membrane and extend 1/2 inch from outside edge of veneer. Provide "end dam" flashing as detailed.

3.04 FIELD QUALITY CONTROL

- A. Make notification when sections of Work are complete to allow review prior to covering air barrier system.

3.05 APPLICATION GENERAL

- A. Apply products in accordance with manufacturers recommendations (see TDS for detailed instructions) and in accordance with project requirements.
- B. The substrate should be clean, sound, free of excess water and loose materials, grease and any contaminants, which may compromise the performance of the product. Do not apply on frozen or frosted substrates.
- C. Apply a thick bead of APOC 264 into all voids in block or concrete, joints in sheathing, and/or plywood substrates. Immediately use a trowel to press the material into the gap or void. Create a smooth monolithic bead that will prepare the substrate to apply AP-650 VP a minimum of 1" on either side of the joint. Once the material has been given the opportunity to develop a skin (cure time will be dependent on temperature and humidity) application of the AP-650 VP can begin.
- D. Two full coats (spray or roll) are recommended for all applications and the overall final coverage is 2.5 to 3.0 gallons per 100 sqft (40 to 50 mils wet which will achieve 20 to 25 mils dry). Each coat is applied at a rate of 1.25 to 1.50 gallons per 100 sqft to a uniform wet film thickness of 20 - 24 mils for smooth surfaces depending upon surface texture and porosity. Let it dry for 5 to 8 hours between the coats.
- E. Once the application is complete, visually inspect the wall for any light areas, blisters, holes, voids, pinholes, surface deficiencies, etc. Repair deficiencies and areas that are not intact by applying additional AP-650 VP to produce a continuous coating.
- F. Exposure of AP-650 VP to UV is not recommended past 180 days.
- G. All sheathing joints, terminations, inside and outside corners must be sealed.

3.06 CLEANING AND PROTECTION

- A. Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.
- B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity. Protect air barrier Work against wet weather conditions for a minimum of 24 hours.
- C. Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible. Special consideration must be given to the exposed un-insulated membrane during winter months of construction to avoid the risk of condensation.
- D. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.
- E. Remove masking materials after installation.
- F. Clean-up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION