

**SECTION 07 27 13
MEMBRANE AIR BARRIERS**

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1.01 REFERENCE STANDARDS

- A. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.
- B. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2025).
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.
- D. ASTM D4263 - Standard Practice for Indicating Moisture in Concrete by the Plastic Sheet Method; 2024.
- E. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2023.
- G. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
- H. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies; 2024.

MEMBRANE AIR BARRIERS

PART 1 - GENERAL

3.01 GENERAL REQUIREMENTS

- A. The Contractor is referred to the Contract Documents which include the "Bid Document," the "Contract Drawings"; the "Specifications"; "General Conditions", "Special Conditions", "Special Notice to Contractors Summary Form" latest edition; the "Form of Proposal", "Amendments to General Conditions", and all amendments and addenda, all of which govern the Work of this Contract.

3.02 SCOPE OF WORK

- A. Work Included: The Work of this Section shall include but not be limited to the following:
 - 1. Vapor Retarder Sheet Membrane

3.03 DEFINITIONS

- A. ABAA: Air Barrier Association of America.
- B. Air Barrier (Retarder) Assembly: The collection of air barrier materials and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

3.04 PERFORMANCE REQUIREMENTS

- A. General: Air barrier (retarder) shall be capable of performing as a continuous vapor-retarding air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air Infiltration: ASTM E 283. Allowable air infiltration will be 0.06 cfm or less per sq. ft., when tested under a constant pressure of 6.24 psf.
- C. Water Penetration: ASTM E331. No water penetration shall occur when tested in static and dynamic modes, under a constant pressure of 12 psf, with 5 gallons of water per hour applied per square foot, for a period of 15 minutes.

D. SUBMITTALS

1. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of the air and vapor barriers.
2. Shop Drawings: Show locations and extent of the air barriers (retarders). Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
3. Include details of interfaces with other materials that form part of the air barriers.
4. Include details of mockup.

E. Product Certificates: For air barriers, certifying compatibility of air barrier (retarder) and accessory materials with Project materials that connect to or that come in contact with air barrier; signed by product manufacturer.

F. Qualification Data: For Applicator.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for air barriers (retarders).

H. REFERENCES

1. The following standards are applicable to this section:
2. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
3. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
4. E 1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
5. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
6. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
7. ASTM E 96: Water Vapor Transmission of Materials.
8. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.
9. AMMA 2400: Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction.
10. ASTM E2112: Standard Practice for Installation of Exterior Windows, Doors and Skylights.
11. Other standards that are referenced within the body of the text.

I. QUALITY ASSURANCE

1. Applicator/ Installer Qualifications: A firm 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 and who is an ABAA-licensed contractor.
2. Source Limitations: Obtain primary air and vapor barrier materials and accessories from single source from single manufacturer.
3. Pre-installation Conference: Conduct conference at Project site.
4. Review air-barrier requirements and installation, special details, mockups, air-leakage barrier protection, and work scheduling that covers air barriers.

J. DELIVERY, STORAGE, AND HANDLING

1. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.
2. Remove and replace liquid materials that cannot be applied within their stated shelf life.
3. Store rolls according to manufacturer's written instructions.
4. Protect stored materials from direct sunlight.

K. PROJECT CONDITIONS

1. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from

environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

L. WARRANTY

1. Submit manufacturer's warranty that air barrier and accessories are free of defects at time of delivery and are manufactured to meet manufacturer's published physical properties and material specifications.
2. Warranty Period: Five years from date of completion of the air barrier membrane installation

PART 2 - PRODUCTS

4.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
1. Carlisle Coatings & Waterproofing Inc.
 2. Grace, W. R. & Co. - Conn.
 3. Henry Company.
 4. Meadows, W. R., Inc.
 5. Tremco Incorporated, an RPM Company.
- B. FLUID-APPLIED, VAPOR PERMEABLE MEMBRANE AIR BARRIER
- C. A fluid-applied, vapor permeable, acrylic membrane that cures to form a resilient, monolithic, fully bonded elastomeric membrane when applied to construction surfaces. The membrane provides superior protection against the damaging effects of air and liquid water ingress on the building structures.
1. Basis of Design: Perm-A-Barrier® VP, as manufactured by Grace Construction Products.
 2. Physical and Performance Properties:
- D. Membrane Air Permeance: ASTM E2178: Not to exceed 0.0004 cfm/sq. ft. under a pressure differential of 0.3 inch. water (1.57 psf).
1. Assembly Performance: Provide a continuous air barrier assembly that has an air leakage not to exceed 0.0008 cfm/sq. ft. of surface area under a pressure differential of 0.3 inch. water (1.57 psf) when tested in accordance with ASTM E2357.
 - a. Membrane Vapor Permeance: ASTM E96, Method B: 11.2 perms
 2. Peel Adhesion: ASTM D903: min. 5 pli or substrate failure to glass faced wall board, min. 20 pli to concrete/CMU
 - a. UV Exposure Limit: Not more than 180 calendar days
- E. PRIMERS
- F. Wall Primer for Self-adhered transition membrane and Self-adhered flexible membrane wall flashing: Perm-A-Barrier WB Primer manufactured by Grace Construction Products; a water-based primer which imparts an aggressive, high tack finish on the treated substrate.
1. Flash Point: No flash to boiling point.
 2. VOC Content: Not to exceed 10 g/L.
 3. Application Temperature: -4°C (25°F) and above.
 4. Freezing point (as packaged): -7°C (21°F).

PART 3 - EXECUTION

5.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 2. Verify that concrete has cured and aged for minimum time period recommended by air barrier manufacturer.
 3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.

4. Verify that masonry joints are flush and completely filled with mortar.
5. Proceed with installation only after unsatisfactory conditions have been corrected.

B. SURFACE PREPARATION

1. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid-applied air barrier assembly.
2. Masonry Substrates: Apply air barrier over concrete block with smooth trowel-cut mortar joints, struck full and flush. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.
3. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.
4. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
5. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
6. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate patching membrane.
7. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
8. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
9. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

C. JOINT TREATMENT

1. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C1193 and air barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D4258 before coating surfaces.
2. Prime substrate as required.

D. AIR BARRIER (RETARDER) MEMBRANE INSTALLATION

1. Apply air barrier membrane to achieve a continuous air barrier according to air barrier manufacturer's written instructions.
2. Apply air barrier membrane within manufacturer's recommended application temperature ranges.
3. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.
4. Vapor-Permeable Membrane Air Barrier: 90-mil wet film thickness, 42~45-mil dry film thickness.
5. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.
6. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

E. CLEANING AND PROTECTION

1. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
2. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed to these conditions for more than 30 days.
3. Protect air barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by air barrier manufacturer.

4. Clean spills, stains, and soiling from adjacent construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 27 13