



SECTION 072703  
Demilec Heatlok® AIR BARRIER SYSTEM (ABS)  
SPRAY POLYURETHANE FOAM AIR BARRIER SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This section includes the following:

1. Closed cell, medium density spray polyurethane foam air barrier located in the non-accessible part of the wall.
2. Materials to bridge and seal the following air leakage pathways and gaps:
  - a. Connections of the walls to the roof air barrier.
  - b. Connections of the walls to the foundation air barrier.
  - c. Seismic and expansion joints.
  - d. Openings and penetrations of window frames, storefront, curtain wall.
  - e. Barrier precast concrete and other envelope systems.
  - f. Door frames.
  - g. Piping, conduit, duct and similar penetrations.
  - h. Masonry ties, screws, bolts and similar penetrations.
  - i. All other air leakage pathways in the building envelope.

SPEC NOTE: COORDINATE RELATED WORK REQUIREMENTS WITH CONTENTS OF REFERENCED SPECIFICATION SECTIONS.

B. Related Work in other Sections includes the following:

1. Section 061100 – Wood Framing: Load-bearing, wood exterior wall framing assemblies to support the spray polyurethane foam air barrier.
2. Section 014000 - Quality Requirements; coordination with Owner’s independent testing and inspection agency.
3. Section 014339 - Mock-Ups; exterior wall mock-ups.
4. Section 015000 - Temporary Facilities and Controls; requirement to schedule work to prevent sunlight and weather exposure of materials beyond limits established by manufacturer; requirement to protect materials from damage after installation and prior to installation of enclosing work.
5. Section 033000 – Cast-In-Place Concrete; requirement that backup concrete be smooth without protrusions.

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

6. Section 042000 – Unit Masonry; requirement that backup masonry joints are flush and completely filled with mortar, and that excess mortar on brick ties will be removed; requirement for gap at deflection joints and fillers; coordination with sequencing of through-wall flashing.
7. Section 054000 – Cold-Formed Metal Framing: Load-bearing, metal exterior wall framing assemblies to support the closed cell, medium density sprayed polyurethane foam.
8. Section 061600 – Sheathing; requirement that backup sheathing has been installed.
9. Section 075000 - Membrane Roofing; requirement for coordination with sequencing of membrane roofing; requirement to seal roof membrane to wall air barrier.

## 1.2 PERFORMANCE REQUIREMENTS

- A. Material Performance: Provide air barrier materials which have an air permeance not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.004 cfm/ft<sup>2</sup> @ 1.57 psf), [0.02 liters per square meter per second under a pressure differential of 75 Pa (0.02 L/(s·m<sup>2</sup>) @ 75 Pa)] when tested in accordance with ASTM E2178 (unmodified).
- B. The water vapor permeance [Desiccant method, (Procedure A) and Water method (Procedure B)] shall be determined in accordance with ASTM E96 and shall be declared by the material manufacturer.

SPEC NOTE: THE WATER VAPOR PERMEANCE IS DECLARED AND INCLUDED IN THIS DOCUMENT SO THAT THE DESIGN PROFESSIONAL HAS THIS INFORMATION READILY AVAILABLE.

- C. Assembly Performance: Provide a continuous air barrier in the form of an assembly that has an air leakage not to exceed 0.04 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.04 cfm/ft<sup>2</sup> @ 1.57 psf) [0.2 liters per square meter per second under a pressure differential of 75 Pa (0.2 L/(s·m<sup>2</sup>) @ 75 Pa)] when tested in accordance with ASTM E2357. The assembly shall accommodate movements of building materials by providing expansion and control joints as required. Expansion / control joints, changes in substrate and perimeter conditions shall have appropriate accessory materials at such locations.
  1. Heatlok® ABS is capable of withstanding combined design wind, fan and stack pressures, both positive and negative on the envelope without damage or displacement, and shall transfer the load to the structure.
  2. Heatlok® ABS shall not displace adjacent materials in the assembly under full load.
  3. Heatlok® ABS shall be joined in an airtight and flexible manner to the air barrier materials of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations, creep, and anticipated seismic movement.
- D. Connections to Adjacent Materials: Provide connections to prevent air leakage at the following locations:

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

1. Foundation and walls, including penetrations, ties and anchors.
2. Walls, windows, curtain walls, storefronts, louvers and doors.
3. Different assemblies and fixed openings within those assemblies.
4. Wall and roof connections.
5. Floors over unconditioned space.
6. Walls, floor and roof across construction, control and expansion joints.
7. Walls, floors and roof to utility, pipe and duct penetrations.
8. Seismic and expansion joints.
9. All other potential air leakage pathways in the building envelope.

### 1.3 SUBMITTALS

- A. Submittals: Submit in accordance with Division 1 requirements.
- B. Quality Assurance Program: Submit evidence of current Contractor standing and Installer approval under Demilec ABS. Submit Contractor and Installer(s) current certificates.
- C. Product Data: Submit Heatlok® ABS Product Data, Demilec instructions for evaluating, preparing, and treating substrate, temperature and other limitations of installation conditions, Technical Data, and tested physical and performance properties.
  1. Include statement from Demilec that Heatlok® ABS Primer used to adhere Heatlok® ABS Membrane to the underlying substrate is chemically compatible to the substrate material.
  2. Samples: Submit clearly labeled samples, three (3) inch by four (4) inch [75 mm by 100 mm] minimum size of each material specified.
- D. Shop Drawings of Mock-Up: Submit Shop Drawings of proposed mock-ups showing plans, elevations, large-scale details, and air barrier transitions and terminations.
- E. Shop Drawings: Submit Shop Drawings showing locations and extent of Heatlok® ABS assemblies and details of all typical conditions, intersections with other envelope assemblies and materials, membrane counter-flashings, and details showing how gaps in the construction will be bridged, how inside and outside corners are negotiated, how materials that cover the materials are secured with air-tight condition maintained, and how miscellaneous penetrations such as conduits, pipes, electric boxes and similar items are sealed.
  1. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project.
  2. Include statement that the Heatlok® ABS system is compatible with adjacent materials proposed for use.
  3. Include required values for field adhesion test on each substrate in accordance with ASTM D4541 (modified), using a type II pull tester.
- F. Compatibility: Submit letter from Demilec stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

proposed for use. Submit letter from Demilec that cleaning materials used during installation are chemically compatible with adjacent materials proposed for use.

- G. Heatlok® ABS Contractor Qualifications: Heatlok® ABS Subcontractor(s) shall be approved by Demilec at the time of bidding and during the complete installation period by Demilec whose Installer(s) are trained in accordance with the site Quality Assurance Program used by Demilec.
  - 1. Heatlok® ABS Installer(s) shall be trained by Demilec for the Demilec Quality Assurance Program in accordance with the requirements outlined in the QAP program used by Demilec. Installers shall have their certificate available on the project site, for inspection upon request.
- H. Obtain Heatlok® ABS Materials from only Demilec including Heatlok® Spray Foam, membrane and mastic.
- I. Accredited Laboratory Testing for Materials: Laboratory accredited by International Accreditation Service Inc. (IAS), American Association for Laboratory Accreditation (A2LA), or the Standards Council of Canada (SCC).
- J. VOC Regulations: Demilec provides products which comply with applicable regulations controlling the use of volatile organic compounds.
- K. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing work of this Section. Agenda shall include, at a minimum, construction and testing of mock-up, sequence of construction, coordination with substrate preparation, air barrier materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction and chemical/fire safety plans. Attendance is required by representatives of related trades including covering materials, substrate materials and adjacent materials.
- L. Quality Assurance: Implement site Quality Assurance Program requirements used by Demilec. Coordinate with Demilec Technical Service Representatives and any independent testing and inspection agencies engaged by the Owner. Do not cover the air barrier assembly until it has been inspected, tested and accepted.
- M. Mock-Ups: Build mock-up representative of Heatlok® ABS assemblies and glazing assemblies including backup wall and typical penetrations as acceptable to the Architect. Mock-up shall be dimensioned no less than eight (8) feet long by eight (8) feet high [2.50 meters long by 2.50 meters high] and include Heatlok® ABS materials and accessories proposed for use in the exterior wall assembly.
- N. Mock-Up Tests for Demilec Heatlok® Spray Foam Adhesion: The Contractor/Installer shall test the mock-up for Heatlok® Spray Foam Insulation adhesion in accordance with ASTM D4541 (modified) using a type II pull tester except that the Heatlok® shall be cut through to separate the material attached to the disc from the surrounding material. Perform test after curing period recommended by Demilec. Record mode of failure and area where Heatlok failed in accordance with ASTM D4541. When Demilec has established a minimum adhesion level for

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

the product on the particular substrate, the inspection report shall indicate whether this requirement has been met. Where Demilec has not declared a minimum adhesion value for their product/substrate combination, the value shall simply be recorded.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original packages with seals unbroken, Demilec labeled, including name, date of manufacture, and directions for storage.
- B. Store Demilec ABS materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by Demilec. Protect stored materials from direct sunlight and other sources of ultra-violet light.
- C. Handle materials in accordance with Demilec recommendations.

#### 1.5 PROJECT CONDITIONS

- A. Temperature: Install Demilec Heatlok Insulation within range of ambient and substrate temperature, and moisture content recommended by Demilec. Do not apply Demilec ABS to a damp or wet substrate.
- B. Field Conditions: Do not install Demilec ABS materials in snow, rain, fog, or mist. Do not install Demilec ABS when the temperature of substrate surfaces and surrounding air temperatures are below those recommended by Demilec.
- C. Sequencing. Do not install Demilec ABS before the roof assembly has been sufficiently installed to prevent a buildup of water in the interior of the building.
- D. Compatibility. Do not allow Demilec ABS to come in contact with chemically incompatible materials.
- E. Ultra-violet exposure. Do not expose Demilec ABS to sunlight longer than 1 year.

#### 1.6 WARRANTY

- A. Material Warranty: Provide Demilec standard product warranty, for a minimum of three (3) years from date of Substantial Completion.
- B. Subcontractor Installation Warranty: Provide a two (2) year installation warranty from date of Substantial Completion, including all accessories and materials of the air barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of attachment, loss of cohesion/adhesion and failure to cure properly.

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

## PART 2 - MATERIALS

### 2.1 AIR BARRIER MATERIALS

A. Heatlok® ABS System: Subject to compliance with requirements, provide one of the following:

1. Material: HEATLOK® Soy 200 Plus, Heatlok® XT by Demilec (USA) LLC [www.demilec.com](http://www.demilec.com):

a. AIR BARRIER MATERIAL PROPERTIES:

i. Air permeance for this material has been tested and reported as being 0.0002 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.0002 cfm/ft<sup>2</sup> @ 1.57 psf), [0.001 liters per square meter per second under a pressure differential of 75 Pa (0.001 L/(s·m<sup>2</sup>) @ 75 Pa)] at 1.5" (39 mm) when tested in accordance with ASTM E2178 (unmodified).

ii. The water vapor permeance for this material has been tested and reported as being 45.1 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (45.1 ng/(Pa·s·m<sup>2</sup>) [0.789 US perms] at 1.5" (39 mm) when tested in accordance with ASTM E96 (desiccant method - unmodified).

iii. Water vapor permeance for this material has been tested and reported as being 91.9 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (91.9 ng/(Pa·s·m<sup>2</sup>) [1.61 US perms] at 1.5" (39 mm) when tested in accordance with ASTM E96 (water method - unmodified).

b. AIR BARRIER ACCESSORY MATERIALS:

i. Membrane at Transitions in Substrate and Connections to Adjacent Elements:

1. Heatlok® ABS Membrane

ii. Transition Membrane between Heatlok® ABS Membrane and Roofing and Other Adjacent Materials:

1. Heatlok® ABS Membrane

iii. Counter-flashing for Masonry Through-Wall Flashing:

1. Heatlok® ABS Membrane

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. The Demilec approved Contractor shall examine substrates, areas, and conditions under which the Heatlok® ABS assembly will be installed, with General Contractor, for compliance with the following requirements.
1. Confirm site access logistics and scheduling requirements, including but not limited to use of scaffolding, lifts and staging.
  2. At the end of each working day the General Contractor shall provide weather protection at the top of parapet walls and non finished roofs to prevent moisture migration into walls and damage to installed ABS.
  3. Verify that surfaces and conditions are suitable prior to commencing work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
  4. Ensure that the following conditions are met:
    - a. Surfaces are sound, dry, even, and free of excess mortar or other contaminants.
    - b. Inspect substrates to be smooth without large voids or sharp protrusions. Inform General Contractor if substrates are not acceptable and need to be repaired by the concrete sub-trade.
    - c. Inspect masonry joints to be reasonably flush and completely filled, and ensure all excess mortar sitting on masonry ties has been removed. Inform General Contractor if masonry joints are not acceptable and need to be repaired by the mason sub-trade.
  5. Verify substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263 and take suitable measures until substrate passes moisture test.
  6. Verify sealants are compatible with membrane proposed for use. Perform field peel-adhesion test on materials to which sealants are adhered.
  7. Notify Architect in writing of anticipated problems using Heatlok® ABS over substrate prior to proceeding.

### 3.2 SURFACE PREPARATION

- A. The Demilec approved Contractor shall ensure the substrate is clean, dust-free, dry and prepared in accordance with Demilec written instructions. The General Contractor shall be notified if this is not the case.
1. Ensure that penetrating work by other trades is in place and complete.
  2. Prepare surfaces by brushing, scrubbing, scraping, grinding or compressed air to remove loose mortar, dust, oil, grease, oxidation, mill scale and other contaminants which will affect adhesion of Heatlok® ABS.

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

3. Wipe down metal surfaces to remove release agents or other non-compatible coatings using clean sponges or with a material chemically compatible with Heatlok® ABS materials.
- B. Prime substrate for installation of sheet membrane transition strips if required by Demilec and as follows:
1. Prime masonry, concrete substrates with primers.
  2. Prime glass-fiber surfaced gypsum sheathing with an adequate number (if applicable) of coats to achieve required bond, with adequate drying time between coats.
  3. Prime wood, metal, structural steel, sheet metal, and painted substrates with primer.
  4. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through Heatlok® ABS membrane.
- C. Protection from Demilec Heatlok® ABS Spray Polyurethane Foam:
1. Mask and cover adjacent areas and materials that aren't being sprayed to protect from over-spray.
  2. Ensure any required foam stop or back up material are in place and complete to prevent over spray and achieve complete seal.
  3. Seal off existing ventilation equipment. Install temporary ducting and fans to ensure exhaust fumes are removed from the spray location to exterior of the building. Provide for make-up air.
  4. Erect barriers, isolate area and post warning signs to advise non-protected personnel to avoid the spray area.

### 3.3 INSTALLATION

- A. Transition Strip Installation: Install Heatlok® ABS membrane and Demilec Heatlok® spray polyurethane foam to provide continuity throughout the building envelope. Install materials in accordance with Demilec instructions and the following:
1. Apply primer for Heatlok® ABS membrane at rate recommended by Demilec. Allow primer to dry completely before membrane application. Apply as many coats as necessary for proper adhesion.
  2. Position subsequent sheets of membrane applied above so that it overlaps the membrane sheet below by a minimum of 2.0 inches (50 mm). Roll into place with roller ensuring all transition membranes are free of fish-mouths, wrinkles, delaminations, bubbles and voids.
  3. Overlap horizontally adjacent pieces of membrane a minimum of 2.0 inches (50 mm). Roll all areas of membrane including seams with roller.
  4. Seal around all penetrations with Heatlok® ABS mastic.
  5. Connect air barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers,

Heatlok® ABS - AIR BARRIER SYSTEM  
072713



exterior doors and other intersection conditions and perform sealing of penetrations, using accessory materials and in accordance with Demilec recommendations.

6. To bridge gaps >1/4" (3 mm) in wall construction at changes in substrate plane or changes in adjoining materials, provide Heatlok® ABS membranes.
7. Provide transition membrane, sealant, mastic, membrane counter-flashing or other material recommended by Demilec at 90 degree inside or outside corners when the interface is permitted to move independent of the intersecting plane. Follow Demilec instructions on how to treat interlocked CMU or structurally-attached 90 degree cast-in place concrete corners.
8. Provide mechanically fastened non-corrosive metal sheet to span gaps greater than 1.0 inch (25 mm) in substrate plane and to make a smooth transition from one plane to the other. Membrane shall be continuously supported by substrate.
9. At through-wall flashings, provide an additional 6.0 inch (150mm) wide strip of Heatlok® ABS membrane counter-flashing to seal top of through-wall flashing to membrane. Seal exposed top edge of strip with bead of Heatlok® ABS mastic.
10. At deflection and control joints, provide backup for the membrane to accommodate anticipated movement.
11. At expansion and seismic joints provide transition to the joint assemblies.
12. Apply a bead or trowel coat of Heatlok® ABS mastic along membrane seams at reverse lapped seams, rough cuts, and as recommended by Demilec.
13. At end of each working day, seal top edge of self-adhered membrane to substrate with termination mastic if exposed.
14. Do not allow materials to come in contact with chemically incompatible materials.
15. Do not expose membrane to sunlight longer than 6 months.
16. Ensure that membranes at terminations have a pull adhesive of 16 lb/in<sup>2</sup> or greater.
17. Inspect installation prior to enclosing assembly and repair damaged areas with Demilec Heatlok spray polyurethane foam as recommended by Demilec.

**B. Installation of Heatlok® Spray Polyurethane Foam: Install materials in accordance with Demilec instructions and the following:**

1. The Installer(s) and those within the work area shall use proper personal protective equipment (PPE) during the installation of material in accordance with US Government regulation 29 CFR 1910.134.
2. The Installer(s) shall follow all OSHA requirements when working on a job-site.
3. Warning signs shall be displayed on each job site in the spray area warning of health and safety hazards for those personnel who do not comply with the personal protective equipment as required by Federal law.
4. Equipment used to spray polyurethane foam shall comply with the manufacturer's instructions for the specific type of application and type of material being sprayed.
5. Apply only when surfaces and environmental conditions are within limits instructed by Demilec.
6. Apply in consecutive passes as required by Demilec to thickness as indicated on drawings. Passes shall be not less than ½ inch (12 mm) and not greater than 50 mm (2

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

inches) or greater than the maximum thickness allowed by Demilec. An additional pass of 2.0 inches (50 mm) shall only be done after the first pass has had time to cool.

7. Install within Demilec tolerances, but not more than minus ¼ inch (6 mm).
8. Do not install Heatlok® ABS spray polyurethane foam within 3.0 inches (75 mm) of heat emitting devices such as light fixtures and chimneys.
9. Finished surface of foam insulation to be free of voids and embedded foreign objects.
10. Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened. Ensure cleaning methods do not damage work performed by other sections.
11. Trim, as required, any excess thickness that would interfere with the application of cladding/covering system by other trades.
12. Clean and restore surfaces soiled or damaged by work of the section. Consult with section of work soiled before cleaning to ensure methods used will not damage the work.
13. Complete connections to other air barrier components and repair any gaps, holes or other damage using material in a manner approved by primary air barrier material manufacturer.

#### 3.4 FIELD QUALITY CONTROL

- A. Owner's Inspection and Testing: Cooperate with Owner's testing agency. Allow access to work areas and staging. Notify Owner's testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is accepted.
- B. Demilec Installer Audits: Cooperate with Demilec auditing personnel. Allow access to work areas and staging.
  1. Audits and subsequent testing shall be carried out as requested by the owner or Architect at the frequency noted in the bid documents.
  2. Forward written audit reports to the Architect within 10 working days of the audit and test being performed.
  3. If the audit reveals any defects, promptly remove and replace defective work at no additional cost to the Owner.

#### 3.5 PROTECTING AND CLEANING

- A. Protect air barrier materials from damage during installation and the remainder of the construction period, according to Demilec written instructions.
  1. Coordinate with installation of materials which cover the air barrier assemblies, to ensure exposure period does not exceed that recommended by Demilec.

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by Demilec.

END OF SECTION

Heatlok® ABS - AIR BARRIER SYSTEM  
072713

Page **11** of **11**