

PART 1 GENERAL

1.1 Section Includes

- .1 Materials and installation methods providing primary air/vapour barrier materials and assemblies.
- .2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

1.2 Related Sections

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 61 00 - Common Product Requirements.
- .3 Section 07 92 00 - Joint Sealants.

1.3 References

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13M, Sealing Compound, One Component, Elastomeric Chemical Curing.
 - .2 CAN/CGSB-19.18M, Sealing Compound, One Component, Silicone Base Solvent Curing.
 - .3 CAN/CGSB-19.24M, Multi-Component, Chemical Curing Sealing Compound.
 - .4 CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .2 National Building Code of Canada (NBCC)
 - .1 NBCC, Part 5 - Environmental Separation
- .3 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

1.4 Submittals

- .1 Submit manufacturer's product data sheets.
- .2 Submit manufacturer's installation instructions.

1.5 Quality Assurance

- .1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

- .2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.
- .3 Manufacturer's Representative:
 - .1 Inspect substrate prior to commencement of work, twice during application of membrane and at commissioning to ascertain that air/vapour barrier system is installed according to membrane manufacturer's most current published specifications and details.
 - .2 Provide technical assistance to applicator and assist where required in correct installation of membrane.
 - .3 Provide certificate of quality compliance upon satisfactory completion of installation.
- .4 Maintain one copy of documents on site.

1.6 Qualifications

- .1 Applicator: Company specializing in performing work of this section with minimum 5 years documented experience with installation of air/vapour barrier systems. Complete installation must be approved by the material manufacturer.
- .2 Applicator: Company who is currently licensed by certifying organization must maintain their license throughout the duration of the project.

1.7 Mock-Up

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical panel, 10 m² minimum, incorporating wall openings, insulation, building corner condition, illustrating materials interface and seals.
- .3 Locate where directed.
- .4 Mock-up may remain as part of the Work.
- .5 Allow 48 h for inspection of mock-up by Departmental Representative before proceeding with air/vapour barrier Work.

1.8 Pre- Installation Meetings

- .1 Convene one week prior to commencing work of this section.

1.9 Delivery, Storage And Handling

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions. Deliver membrane materials in factory wrapped packaging indicating name of manufacturer and product.
- .3 Avoid spillage. Immediately notify Departmental Representative if spillage occurs and start clean up procedures.
- .4 Clean spills and leave area as it was prior to spill.
- .5 Store roll materials on end in original packaging.
- .6 Store primers at temperatures of 5 °C and above to facilitate handling. Keep solvent away from open flame and excessive heat.

1.10 Project Environmental Requirements

- .1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.
- .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
- .3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.11 Warranty

- .1 Provide a written warranty for work of this section from Manufacturer for failure due to defective materials and from contractor for failure due to defective installation workmanship for ten (10) years respectively from the date of Substantial Completion.
- .2 Include coverage of installed sealant and sheet materials which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion or do not cure.

1.12 Measurement For Payment

- .1 No measurement for payment is to be made under this section. Include costs in unit prices or lump sum for items in which this item is required.

PART 2 PRODUCTS

2.1 Sheet Membrane Air Barrier (Type 1)

- .1 Sheet Seal: Self-Adhesive bitumen laminated to high-density polyethylene film, nominal total thickness of 1.0 mm.

.1	Membrane Physical Properties	
.1	Application	min 5 °C
.2	Service Temperature	-40 °C to 70 °
.3	Elongation	min 200%
.4	Tensile strength	min 2.4 Mpa
.5	Puncture Resistance	min 178 N
.6	Water vapour transmission	2.8mg/Pa.s.m ² (0.05 perms)
.7	Moisture Absorption	0.1%
.8	Air Leakage at 75 Pa	0.02L/Sm ²
.9	Air Leakage of the 3000 Pa test	No change

2.2 Liquid Membrane Air/Vapour Barrier (Type 2)

- .1 Single component, liquid applied, water-based, polymer-modified air barrier providing a seamless, elastomeric membrane when cured, wet film thickness 1.53 mm, cured film thickness 1.15 mm.
- .2 Liquid membrane Air/Vapour physical properties:
 - .1 Application Temperature: min. 4° C
 - .2 Service Temperature: -29° C to 49° C
 - .3 Elongation: 1500%
 - .4 Tensile Strength: 0.10 MPa
 - .5 Water Vapour Permeance: 0.03 perms
 - .6 Air Leakage at 75 Pa: < 0.02 L/s/m²

2.3 Liquid Membrane Vapour Permeable Air Barrier (Type 3)

- .1 Water-based air-barrier providing a tough, seamless, elastomeric membrane when cured, allowing moisture vapour to pass through it, wet film thickness 2.3 mm, cured film thickness 1.15 mm.
- .2 Liquid membrane vapour permeable air barrier physical properties:
 - .1 Application Temperature: min. 4° C
 - .2 Service Temperature: -29° C to 49° C
 - .3 Elongation: 1500%
 - .4 Water Vapour Permeance: 12 perms
 - .5 Air Leakage at 75 Pa: < 0.02 L/s/m²

2.4 Sheet Membrane Vapour Permeable Air Barrier (Type 4)

- .1 Self-adhering reinforced modified polyolefin tri-laminate water resistive, vapour permeable, air barrier membrane to the following properties:

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| .1 | Weight: | 160 g/m ² |
| .2 | Water Vapour Transmission: | 202 g/m ² |
| .3 | Tensile Strength: | 182N MD and 129N CD |
| .4 | Water Vapour Permeance: | 1658 ng/Pa.m2.s |
| .5 | Air Leakage: | <0.02 L/s/m2 |
| .6 | Average Dry Breaking Force: | 565N MD and 405N CD |

2.5 Exterior Wall Sheathing Paper

- .1 spunbonded olefin type coated impregnated sheathing paper to CAN/CGSB-51.32 single ply, as indicated.

2.6 Sealants

- .1 Sealants in accordance with Section 07 92 00 - Joint Sealants.
- .2 Primer: recommended by sealant manufacturer.
- .3 Primer for type 4 Air Barrier: quick setting, synthetic rubber based adhesive aerosol.

2.7 Schedule

- .1 Type 1 Air Barrier: for installation on any solid surface.
- .2 Type 2 Air Barrier: for installation on masonry or concrete surfaces.
- .3 Type 3 Air Barrier: for installation on wood/gypsum board surfaces.
- .4 Type 4 Air Barrier: for installation on any solid surface approved by manufacturer.

PART 3 EXECUTION

3.1 Examination

- .1 Verify that surfaces and conditions are ready to accept the Work of this section.
- .2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer's requirements.
- .3 Report any unsatisfactory conditions to the Departmental Representative in writing.
- .4 Do not start work until deficiencies have been corrected.

3.2 Preparation

- .1 Remove loose or foreign matter which might impair adhesion of materials.

- .2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.
- .3 Ensure all substrates are free of surface moisture prior to application of membrane and primer.
- .4 Ensure metal closures are free of sharp edges and burrs.
- .5 Prime substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.

3.3 Installation (Sheet Membrane)

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Over the properly prepared substrate surface apply primer with a roller and allow drying to a tacky surface. Prime only area to be covered in a working day. Reprime area not covered with membrane within 24 hours.
- .3 After primer has dried, using a hand roller firmly press the entire membrane onto the primed surface, in strict accordance with membrane manufacturer's written instructions.
- .4 Ensure complete coverage of and adhesion of all substrates to receive membrane, including wall penetrations. Co-operate with other trades to ensure continuity of membrane.
- .5 Overlap membrane 50mm and carefully smooth out with a roller to ensure full continuous bond throughout overlaps without fissures or fishmouthing.
- .6 It is important that a complete air seal be achieved. Be responsible for the completeness of membrane wherever it is not specifically detailed. Consult with Departmental Representative if there is any doubt as to the integrity of membrane, whether detailed or not.
- .7 In order to ensure a complete seal, seal membrane to all penetrations in an approved manner.
- .8 Apply a trowelled bead of mastic to all terminations of the membrane at the end of a day's work.
- .9 Do not enclose membrane until it has been inspected and approved by Departmental Representative. Inform Departmental Representative 48 hours prior to required inspection.

3.4 Installation (Liquid Membrane Air/Vapour Barrier)

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Prepare surfaces ensuring they are clean, structurally sound and smooth. Patch all cracks, small voids, irregularities and small deformities with manufacturer approved patch material.
- .3 Apply minimum 150 mm wide self-adhering air barrier strip between joints of dissimilar building materials.
- .4 Apply liquid membrane to substrate by spraying or nap roller as per manufacturer's instructions.
- .5 Ensure complete coverage of and adhesion of all substrates to receive liquid membrane, including wall penetrations. Co-operate with other trades to ensure continuity of membrane.
- .6 It is important that a complete air seal be achieved. Be responsible for the completeness of liquid membrane wherever it is not specifically detailed. Consult with Departmental Representative if there is any doubt as to the integrity of the liquid membrane, whether detailed or not.
- .7 In order to ensure a complete seal, seal liquid membrane to all penetrations in an approved manner.
- .8 Do not enclose membrane until it has been inspected and approved by Departmental Representative. Inform Departmental Representative 48 hours prior to required inspection.

3.5 Installation (Liquid Membrane Vapour Permeable Air Barrier)

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Prepare surfaces ensuring they are clean, structurally sound and smooth. Patch all cracks, small voids, irregularities and small deformities with manufacturer approved patch material.
- .3 Joints in exterior sheeting of 6.4 mm or greater to be covered with tape or filled with mastic caulking compound prior to application of liquid membrane as per manufacturer's recommendations.
- .4 Apply minimum 150 mm wide self-adhering air barrier strip between joints of dissimilar building materials.
- .5 Apply liquid membrane to substrate by spraying or roller as per manufacturer's instructions.

- .6 Ensure complete coverage of and adhesion of all substrates to receive liquid membrane, including wall penetrations. Co-operate with other trades to ensure continuity of membrane.
- .7 It is important that a complete air seal be achieved. Be responsible for the completeness of liquid membrane wherever it is not specifically detailed. Consult with Departmental Representative if there is any doubt as to the integrity of the liquid membrane, whether detailed or not.
- .8 In order to ensure a complete seal, seal liquid membrane to all penetrations in an approved manner.
- .9 Do not enclose membrane until it has been inspected and approved by Departmental Representative. Inform Departmental Representative 48 hours prior to required inspection.

3.6 Protection Of Work

- .1 Protect finished Work in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Do not permit adjacent work to damage work of this section.
- .3 Ensure finished Work is protected from climatic conditions.

3.7 Inspection

- .1 Carefully inspect for continuity of air barrier prior to placement of insulation.
- .2 Repair all deficient membrane areas.
- .3 Misaligned or inadequately lapped seams, punctures or other damage must be repaired with a patch of air barrier membrane extending 50mm in all directions from edge of damaged areas.
- .4 Cover membrane immediately after Departmental Representative's inspection to protect from damage by other trades.

3.8 Testing

- .1 Air leakage testing as directed by Departmental Representative and paid for by contractor will be performed by professional testing agency for the locations selected at random for penetrations, laps, corners, etc.
- .2 Testing will be witnessed by Departmental Representative and test reports will be signed by tester, site representative and contractor.
- .3 Inform Departmental Representative 48 hours prior to required testing.

END OF SECTION