

WALLTITE ECO® v.2 by BASF Canada Inc, is an Air Barrier assembly intended to provide an air and moisture barrier assembly for building enclosures, located in appropriate assembly locations in buildings during enclosure construction. This section includes on site (in situ) applied polyurethane foam, by spray, primarily for use as an air barrier and thermal insulation, also supplied by BASF Canada Inc. This specification includes components required by the spray polyurethane foam (SPF) manufacturer for the foam application to be considered a complete air barrier assembly system. Refer to applicable Spec Notes prior to substituting any of the specified components, as alternate products may defeat the intent to provide an air barrier functional assembly.

Building code regulations often require a fire protective coating or cover over this insulation type, if left exposed, often referred to as a 15-minute Thermal Barrier.

NOTE: This material is not intended to be used for roofing applications. This section includes proprietary and descriptive type specifications; edit text to avoid conflicting requirements.

For more information, refer to our technical webpage on: www.walltiteeco.com

Part 1 General

1.1 SECTION INCLUDES

In this article, select the components or assemblies that are intended to be part of the content of this section and will not be included in other sections.

- .1 Foamed-in-place polyurethane [in masonry cavity walls] [in exterior framed walls] [to locations indicated], intended to function as an air barrier assembly to and provide thermal protection.
- .2 Installation of transition membranes, through wall flashings and membranes at openings, and over construction, control and expansion joints, at junctions between different assemblies and at penetrations.

1.2 RELATED SECTIONS

In this article, indicate those other sections that inter-rely on this section. The listing below is only partial and should be edited to include those sections specific to the project that describes subjects or products affecting this section directly.

- .1 Section [04 26 16 - Veneer Masonry] [_____]: Cavity wall flashings.
- .2 Section [04 27 23 - Cavity Wall Unit Masonry] [_____]: Wall construction.
- .3 Section 07 26 00 - Vapour Retarders: Materials continuing the vapour seal.
- .4 Section 07 27 00 - Air Barriers: Materials continuing the air barrier seal.

1.3 REFERENCES

Edit this article after editing the rest of this section. Only list reference standards below, that are included within the text of this section, when edited for a project specification - delete other references that do not apply.

- .1 ASTM C411-05 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
- .2 ASTM C518-10 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- .3 ASTM C1338-08 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
- .4 ASTM D1621-10 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
- .5 ASTM D1622-08 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- .6 ASTM D1623-09 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics (Type C sample).
- .7 ASTM D2126-09 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- .8 ASTM D2369-10, Standard Test Method for Volatile Content of Coatings.
- .9 ASTM D2842-06 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- .10 ASTM D6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics.
- .11 ASTM E96/E96M-10 - Standard Test Methods for Water Vapor Transmission of Materials.
- .12 CAN/ULC S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .13 CAN/ULC S127-07 - Standard Corner Wall Method of Test for Flammability Characteristics of Non-Melting Building Materials.
- .14 CAN/ULC S705.1-01, including amendment 1 & 2 - Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material – Specification.
- .15 CAN/ULC S705.2-05 - Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Application.

- .16 CAN/ULC S770-09 - Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams.
- .17 CAN/ULC S774-03 - Standard Laboratory Guide for the Determination of Volatile Organic Compound Emissions from Polyurethane Foam.
- .18 Canadian Construction Materials Centre (CCMC) Evaluation Report CCMC 13467-R.
- .19 Canadian Construction Materials Centre (CCMC) Evaluation Report CCMC 13530-L.
- .20 Canadian Construction Materials Centre (CCMC) Technical Guide, Air Barrier Systems for Exterior Walls of Low-Rise Buildings, MasterFormat Number 07 27 09.01.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Section [01 31 00] [____]: Project management and coordination procedures.
- .2 Coordination:
 - .1 Coordinate with other work having a direct bearing on work of this section.
 - .2 Coordinate work to ensure timely placement of insulation within construction spaces.
- .3 Pre-installation Meetings: Convene [one (1)] [____] week before starting work of this section.

1.5 SUBMITTALS FOR REVIEW

- .1 Section [01 33 00] [____]: Submission procedures.
- .2 Sprayed polyurethane foam (SPF) installer certificate: Submit name of SPF installer with copy of certification card verifying that the SPF installer is licensed by the source manufacturer.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed [specified requirements] as evidenced by a current CCMC Evaluation Report certifying the polyurethane foam product for use as an air barrier component is in accordance with the National Building Code of Canada 2005.
- .4 Product Data: Provide product description, insulation properties, preparation requirements [and overcoat properties].

Include the following ONLY if specifying for a LEED project. Specify only the technical requirements necessary to achieve the credits desired for this project.

- .5 Sustainable Design:
 - .1 Section [01 35 18] [____]: LEED documentation procedures.
 - .2 Provide required LEED documentation for Product [recycled content,] [regional material content,] [low-emitting material information].

1.6 SUBMITTALS FOR INFORMATION

The following submittals are optional for confirmation of specified products. Products intended to be provided by other non-specified manufacturers require conformation of acceptance by these submittals and will be assessed for acceptability.

- .1 Section [01 33 00] [____]: Submission procedures.

When manufacturer's instructions for specific installation requirements are referenced in PART 3 Execution, include the following request for submittal of those instructions. Edit the PART 3 statements to avoid conflict with manufacturer's instructions.

- .2 Installation Data: Submit manufacturer's special installation requirements, perimeter conditions requiring special attention, and [____].
- .3 Testing Reports: Submit as performed by manufacturer's approved testing agency and as required by CAN/ULC S705.2.
- .4 Daily Reports: As required by CAN/ULC S705.2.
- .5 Adhesion tests at transition membranes as per BASF application guidelines for air barrier system.

1.7 CLOSEOUT SUBMITTALS

Include the following submittal requirements when confirmation of changes that that are intended to be made or may have been made, prior to project completion; and prior to final inspection or project completion. Consider altering the following text according to questionable or un-expected conditions.

- .1 Section [01 78 10] [____]: Submission procedures for products not approved in an initial submission or where changes were made, apply.

Include the following ONLY if specifying for a LEED project.

- .2 Sustainable Design Closeout Documentation: [____].

1.8 QUALITY ASSURANCE

This article includes statements that require quality applicable to the whole section. If it is desirable or required for a manufacturer of a product to be ISO 9000/14000 certified, include such statement below. Select the appropriate optional text to suit a Project's expectations or intent.

- .1 Products of This Section:
 - .1 Listed with Canadian Construction Materials Centre (CCMC) certifying the product for use as an air barrier system in accordance with the National Building Code of Canada 2005.
 - .2 [Greenguard Indoor Air Quality Certified under the Greenguard for Children and Schools program.]
 - .3 [EcoLogo™ certified.]
 - .4 Eco-efficiency, life cycle analysis approved by NSF or equivalent

- .2 Spray Polyurethane Foam (SPF) Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum [twenty-five (25)] [_____] years [documented] experience.
- .3 Spray Polyurethane Foam (SPF) Contractor Qualifications:
 - .1 Company specializing in performing the work of this section with minimum [three (3)] [_____] years documented experience.

BASF offer a "Quality Assurance and Training Program, Raising Performance to New Heights". BASF also certify installers who successfully complete the BASF Air Barrier System Training Course.

- .2 Certified by BASF Canada as having successfully completed the BASF Quality Assurance and Training Program, Raising Performance To New Heights®.
- .3 Certified by BASF Canada as having successfully completed the BASF Air Barrier System Training Course.
- .4 Independent Testing Agency:

The authorized agent for BASF is Morrison Hershfield.

- .1 Arrange for site reviews by Manufacturer's authorized agent. Schedule the number of site reviews in accordance with the following schedule:

Coverage Area, sq. m. (sq. ft.)	No. of Site Reviews
1 – 2,323 (1 – 25,000)	1
2,324 – 4,645 (25,001 – 50,000)	2
4,646 – 6,968 (50,001 – 75,000)	3
over 6,968 (over 75,000)	4+

- .5 On-Site Documentation:
 - .1 Maintain a copy of the manufacturer's technical manual on site during application of polyurethane foam.
 - .2 Compile Daily Reports chronologically and maintain on site during application.

1.9 AIR BARRIER SYSTEM TESTING REQUIREMENTS

When the transition membrane is to be installed by another trade for warranty purpose (such as the windows installer), the adhesion tests must be performed and approved by the certified SPF installer prior to spraying the polyurethane spray foam.

Allow access to the job site to any BASF or Morrison Hershfield representative for the purpose of technical assistance to verify SPF installer certification or for a review under the BASF Quality Assurance and Training Program.

- .1 Conduct adhesion tests daily in accordance with CAN/ULC S705.2. Record test results in Daily Reports.
- .2 Adhesion Testing:

Perform adhesion test in accordance with BASF Application Guidelines and CCMC report.

- .1 Conduct adhesion testing between the transition membranes and, [sheathing], [masonry][_____] and [other substrates] for compliance in accordance with the manufacturer's guidelines for use in an air barrier application.
- .2 Conduct adhesion testing between the polyurethane foam and [transition membranes], [sheathing], [masonry][_____] and [other substrates] for compliance in accordance with the manufacturer's guidelines for use of SPF in an air barrier application, and to CAN/ULC-S705.2
- .3 Report non-compliant test results along with corrective action taken to the [Consultant][Manufacturer] and include in daily report.

1.10 REGULATORY REQUIREMENTS

Only include this article when required by applicable code criteria.

- .1 Conform to applicable code for protection of foamed plastics.

1.11 MOCK-UP

Use this article for assessing full sized erected assemblies for review of construction, coordination of work of several sections, testing, or observation of operation. A mock-up may also be used for assessing field applied finishes.

- .1 Section [01 43 00] [____]: Requirements for mock-up.
- .2 Provide a [<[____] sq m><<[____] sq ft>>] mock-up including [wall construction] [window and frame] [door frame] [____].
- .3 Locate [where directed by Consultant] [____].
- .4 Approved mock-up [may] [may not] remain as part of the Work.

1.12 ENVIRONMENTAL REQUIREMENTS

- .1 Section [01 35 26] [____]: Environmental conditions affecting products on site.

Ensure the specified ambient and surface temperature requirements required by specified manufacturers are included in this article.

- .2 Do not install insulation when ambient temperature is outside [<-10°C to +40°C><<+14°F to +104°F>>].
- .3 Occupancy: In accordance with CAN/ULC-S774, occupancy is only permitted following delivery of minimum 0.3 air changes per hour for 24 hours following installation.

1.13 COORDINATION

- .1 Coordinate with other work having a direct bearing on work of this section.
- .2 Coordinate work to ensure timely placement of insulation within construction spaces.

Part 2 Products

2.1 MANUFACTURERS

This article is for proprietary specifying. If specifying products by reference to standards only, care must be exercised in editing this delete this article.

- .1 [BASF Canada Inc.]; Product: [WALLTITE ECO v.2].
- .2 Substitutions: [Refer to Section 01 62 00] [Not permitted].

Edit the following descriptive specifications to identify project requirements and to eliminate any conflict with manufacturer's products cited.

2.2 SPRAY POLYURETHANE FOAM INSULATION/AIR BARRIER SYSTEM

Insulation material may be specified either by generic name with identifying insulation characteristics OR by reference to CAN/ULC-S705.1, including amendment 1 & 2. Coordinate with Article 2.1.

- .1 Polyurethane Foam: [To CAN/ULC S705.1, including amendment 1 & 2] closed cell, spray-applied rigid cellular polyurethane foam air barrier and thermal insulation, medium density:

WALLTITE ECO v2 has a Water Vapour Permeance (to ASTM E96) of less than 60ng/Pa•s•m2 @ 50mm as required by the National Building Code of Canada.

IMPORTANT: Use of WALLTITE ECO v2 in environments having sustained high humidity levels (i.e. >55% RH), a separate vapour barrier membrane is required.

- .1 Performance Requirements:
 - .1 Water Vapour Permeance ASTM E96: 42 ng/Pa-s-sq m (0.70 Perms).
 - .2 Flame Spread Classification CAN/ULC S102: Flame Spread < 500, Smoke Developed <500.

Hot surface performance as may be requested by Authorities Having Jurisdiction.

- .3 Hot Surface Performance ASTM C411: Passed when exposed to 93 deg C for 96 hours.
- .4 Fungi Resistance ASTM C1338: No fungal growth after 28 day incubation.
- .5 Long Term Thermal Resistance (LTTR): Conform to the following when tested to CAN/ULC S770.
 - .6 RSI 1.95 @ 50 mm (R11.24 @ 2 inches).
 - .7 RSI 3.00 @ 75 mm (R17.32 @ 3 inches).

- .8 RSI 4.12 @ 100 mm (R23.73 @ 4 inches).
- .9 RSI 1.03/25 mm above 100 mm (R5.93/inch above 4 inches).
- .2 Physical Requirements:
 - .1 Colour: Purple with Indicator Dye Technology.
 - .2 Density ASTM D1622: Minimum 29 kg/cu m (1.8 lb/cu ft).
 - .3 Compressive Strength ASTM D1621: 186 kPa (27.0 psi).
 - .4 Tensile Strength ASTM D1623: 241 kPa (35.0 psi).
 - .5 Open Cell Content ASTM DD2856: 8.0 %.
 - .6 Water Absorption ASTM D2842: 1.2 % by volume.
- .3 Sustainable Requirements:
 - .1 Zero ozone depleting blowing agents.
 - .2 Minimum Recycled Content: EcoLogo certified; 5% by weight.
 - .3 Eco-efficiency, life cycle analysis approved by an independent third party

2.3 AIR BARRIER COMPONENTS

Consultant should review the installation methods, details and ancillary products identified in the BASF Technical Binder and CCMC Evaluation Report 13467-R. Where specific products have been laboratory tested for certification of air barrier system performance requirements, the Consultant shall accept that those products establish the minimum parameters for acceptance of work of this Section.

Substitution for alternative products must be carefully evaluated and in all cases, alternative products must be tested to confirm that the adhesion of the transition membrane achieves a minimum strength of 103 kPa (15 psi). Where adhesion is less than specified, the transition membrane must be mechanically attached, at no cost to the Owner.

NOTE on Primers: BASF recommends using Sonolastic® Primer 733 (www.construction-chemicals.basf.com).

- .1 Primers: As required by CAN/ULC S705.2, Annex A and to suit environmental conditions at time of application.

These Paragraphs include proprietary and descriptive type specifications; edit text to avoid conflicting requirements.

- .2 Transition Membrane: [Self-adhering] [Torch-applied] SBS modified bitumen sheet membrane with laminated polyethylene film facer:
 - .1 Thickness: [$<1.0\text{ mm}><<40\text{ mils}>>$] minimum.
 - .2 Air Leakage: $< 0.005\text{ L/s.m}^2@ 75\text{ Pa}$ to ASTM E283-91.
 - .3 Vapour Permeance: 2.8 ng/Pa.m^2 (.05 Perms) to ASTM E96.
 - .4 Low Temperature Flexibility: -30°C to CGSB 37-GP-56M.
 - .5 Elongation: 200% to ASTM D412 modified.

BASF recommend specifying Tremco ExoAir 110 or Henry Bakor Blueskin SA.

- .6 Acceptable Products: [Tremco ExoAir 110] [Henry Bakor Blueskin SA]
[_____].

Masonry Through-wall Flashings are typically specified in Division 04 (i.e. Section 04 26 16). Coordinate material selection and application with air barrier membrane systems. Edit the following paragraphs accordingly.

- .1 Through-Wall Flashing: Section 04 26 16.

[OR]

- .2 Through-Wall Flashing: [Self-adhering] SBS modified bitumen membrane with laminated polyethylene film facer:

- .1 Performance Requirements: Meeting or exceeding the properties of the transition membrane.

BASF recommend specifying Henry Bakor Blueskin TWF.

- .2 Acceptable Products: [Henry Bakor Blueskin TWF] [_____].

- .3 Sealant: Mastic, synthetic rubber compound required by manufacturer to suit environmental conditions at time of application:

For LEED projects, include the following.

- .1 VOC Limit: Maximum [____ g/l].

2.4 EQUIPMENT

- .1 Comply with CAN/ULC S705.2 and the equipment manufacturer's recommendations for specific type of application.

Part 3 Execution

3.1 EXAMINATION

- .1 Section [01 70 00] [_____]: Verify existing conditions before starting work.
- .2 Verify work within construction spaces or crevices is complete prior to insulation application.
- .3 Verify that surfaces are clean, dry, and free of matter that may inhibit adhesion.

3.2 PREPARATION

- .1 Mask and protect adjacent surfaces from over spray or dusting.

Determine if a primer is required for certain substrates.

- .2 Apply primer in accordance with manufacturer's written instructions.
- .3 Prime all metal and non-porous surfaces when required by polyurethane foam manufacturer's written instructions.

- .4 Ensure that work by other trades that may penetrate through the air barrier system is in place and complete.
- .5 Provide transition membranes [and through wall flashings] as indicated prior to polyurethane foam application.

Include the following text paragraphs only if through-wall flashings are provided by this Section.

- .6 [Through-wall flashing membrane:
 - .1 Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.
 - .2 Prime surfaces and allow to dry, press membrane firmly into place, over lap minimum [$<75\text{ mm}><<3\text{ inches}>>$] at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
 - .3 Applications shall form a continuous flashing membrane and shall extend up a minimum of [$<200\text{ mm}><<8\text{ inches}>>$] up the back-up wall.
 - .4 Install through-wall flashing membrane and extend [$<13\text{ mm}><<1/2\text{ inch}>>$] from outside edge of veneer. Provide end dam flashing as detailed.]

3.3 INSTALLATION

The Consultant should review the installation details included in the BASF Technical Binder and ensure that applicable plan and section details are included on the Drawings. Where conflicts between BASF installation requirements and the details shown on the Drawings occur, the performance of the air barrier assembly may not be realized. The Consultant is advised to contact a BASF representative for applications not specifically included in the BASF Technical Binder.

- .1 Apply insulation to [CAN/ULC-S705.2] and manufacturer's written instructions.
- .2 Apply insulation by spray method, to a uniform monolithic density without voids, in lifts not exceeding 50 mm thickness in a single pass.

Specify insulation either by applied thickness or by required insulation value. In selecting the first option, product data information is required; site verification of applied thickness is necessary. Where thickness varies with location, include a schedule at the end of this section.

- .3 Apply to a minimum cured thickness of [$<[\text{_____}]\text{ mm}><<[\text{_____}]\text{ inches}>>$].

Refer to BASF Technical Binder for proper installation details and ensure that those details are shown on Drawings.

- .4 Overlap air barrier transition membranes and other air/vapour barrier materials to ensure continuity of building envelope.
- .5 Finished surface of foam to be free of voids and imbedded foreign objects.
- .6 Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened.

- .7 Repair damaged areas in accordance with SPF manufacturer's application guidelines for insulation in an air barrier.

3.4 FIELD QUALITY CONTROL

Other special field inspection services may be required, such as building envelope testing, thermographic surveys, etc. If such testing procedures are required, ensure that applicable Division 01 section states who will do the testing and who will pay the cost.

- .1 Section [01 45 00] [____]: Field [inspection and] testing.

Testing for acceptable adhesion of the polyurethane foam to transition membranes, sheathing, masonry and other substrates must be done in accordance with the BASF Technical Binder and CAN/ULC-S705.2

- .2 Conduct daily visual inspection, adhesion testing and density measurements as required by CAN/ULC S705.2 and the manufacturer's application guidelines for air barrier system
- .3 Independent Testing Agency [Morrison Hershfield] approved by BASF is mandatory to conduct visit (s) [____]to verify polyurethane application, foam thickness [and density] and the quality of the installation of the insulation air barrier system, refer to BASF Technical Guidelines.
- .4 Where adhesion strength of transition membrane is less than [$<103 \text{ kPa} <<15 \text{ psi}>>$], mechanically fasten the transition membrane to substrate in accordance with manufacturer's application guidelines for air barrier system.

3.5 PROTECTION OF FINISHED WORK

- .1 Section [01 78 40] [____]: Protecting installed work.
- .2 Do not permit subsequent construction work to disturb applied polyurethane foam.

3.6 SCHEDULES

The following article will assist in preparing a schedule (of insulation locations) for the project. The following schedule includes are EXAMPLES only. Edit the paragraphs below to create a schedule for the components specified in this section. Do not repeat statements that may exist on drawings.

- .1 Between all framing of exterior walls.
- .2 Cavity wall insulation in all exterior walls.
- .3 Interior wall/roof junction.
- .4 Wall construction abutting differing above ceiling materials.
- .5 In other locations as noted on the drawings.

END OF SECTION

WALLTITE ECO® and RAISING PERFORMANCE TO NEW HEIGHTS® are registered trade-marks of BASF Canada Inc. All other trade-marks, registered or otherwise, used herein are either a) the trade-marks of the BASF group of companies and may not be used without permission; or b) the trade-marks and trade names of other companies, products and services, and are the property of their respective owners.

THIS MASTER SPECIFICATION IS A GUIDE ONLY AND MUST BE REVIEWED AND MODIFIED AS REQUIRED TO SUIT INDIVIDUAL PROJECT CONDITIONS. IT IS THE RESPONSIBILITY OF THE ARCHITECT, ENGINEER AND/OR DESIGN PROFESSIONAL, AS APPLICABLE, TO ENSURE THE ACCURACY AND COMPLETENESS OF THE SPECIFICATIONS ISSUED. WALLTITE ECO v.2 MUST BE APPLIED BY PERSONNEL TRAINED AND QUALIFIED BY BASF AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, RULES, REGULATIONS AND GUIDELINES.