



PREMIUM
SPRAY PRODUCTS CANADA
An Accella Brand

SPECIFICATION GUIDE



Insulation/Air Barrier Material, Air Barrier System

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Recommended Guide Specification for Foamsulate ECO Insulation/Air Barrier Material, Air Barrier System

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The following specification describes the Foamsulate ECO™ as an Insulation/Air Barrier Material and Air Barrier System. This specification is a guide only and may need adjustment for the specific projects. It is the responsibility of the design professional to ensure the product is suitable for their application.

PART 1 — GENERAL

1.1 Section Includes

Materials and installation methods required for installation of the primary building insulation and air barrier system to the exterior components of the building envelope.

1.2 References

- a. CAN/ULC-S 705.1: Standard for rigid polyurethane foam spray thermal insulation, medium density – materials specifications
- b. CAN/ULC-S705.2: Standard for rigid polyurethane foam spray thermal insulation, medium density – installer responsibilities.
- c. Premium Spray Products Canada Training Program
- d. Premium Spray Products Canada Installer Training Manual
- e. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials.
- f. CCMC 07272 CCMC Exterior Air Barrier Assemblies
- g. 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.
- h. ASTM E 96: Water Vapour Transmission of Materials

1.3 Related Sections

a. Concrete Curing Section	03 39 00 03300
b. Structural Pre-cast Concrete Section	03 40 00 03400
c. Unit Masonry Section	04 05 00 04200
d. Metal Decking Section	05 10 00 05300
e. Cold Formed Metal Framing Section	05 40 00 05400
f. Rough Carpentry Section	06 10 00 06100
g. Waterproofing Section	07 10 00 07100
h. Vapour-Barrier Section	07 26 00 07260
i. Air-Barrier Section	07 27 00 07260
j. Flexible flashing Section	07 65 00 07270
k. Roof and walls specialities Section	07 70 00 07400
l. Fire and smoke protection Section	07 80 00 07800
m. Thermal Barrier Section	07 81 29 07840
n. Fire Stopping Section	07 84 00
o. Plaster and Gypsum board Section	09 20 00 09250

1.4 Submittals and Test Results

Submit the following prior to commencing with the work:

- a. Before starting the work, submit results of independent laboratory tests, data sheets, physical proprieties that meet or exceed requirements of the CAN/ULC standards for this specification.
- b. Installer Qualifications: Submit proof confirming the installing contractor is licensed by Premium Spray Products Canada Foamsulate ECO™ Training Program to perform the installation of the product or system specified. Licensing is required by CAN/ULC S705.2 Installation Standard and verified by Exova.

1.5 Mock Ups

- a. Create samples that are typical of project (shop drawings, data sheets, and samples).
- b. Create a sample of 5 m² (53.8 sq. ft.) minimum, showing both inner and outer corners. This sample may be part of the completed structure.
- c. Using the polyurethane foam insulation sample that was sprayed in place, the following trials to be conducted on site, and confirmed by Premium Spray Products Canada and Exova PSP independent third party inspection company if required (extra fees may apply):
 - i. Verify core density.
 - ii. Verify adhesion between the transition membrane and the substrate.
 - iii. Verify cohesion/adhesion between the insulation material and the substrate.
 - iv. Ensure results are in compliance and enter them in the Premium Spray Products Canada Foamsulate ECO™ Air Barrier daily work sheet.

1.6 Protective Measures

- a. Ensure the work area is adequately ventilated and in compliance with local and federal regulations. Ensure continuous ventilation of the work area during the course of the application process and for 24 hours thereafter.
- b. Seal all air intake ducts in the working area and downwind of the working area.
- c. Install temporary partitions in order to prevent any effect on the ambient air – outside of the work area – from the sprayed on insulation material.
- d. Protect adjacent surfaces, windows, equipment, and site areas from damage of over spray.
- e. All person inside the working area shall wear adequate respiratory protection and full personal protective equipment in accordance to provincial regulations and the CAN/ULC-S705.2 standard

1.7 Delivery, Storage & Handling

- a. All materials should be delivered and stored in their original packaging bearing the manufacturer's name, quantity, CCMC numbers, and other appropriate technical indicators or references.

1.8 Quality Assurance

- a. Contractor performing work under this section must be licensed under the Premium Spray Products Canada Air Barrier Training Program. The contractor is required by the CAN/ULC S705.2 to purchase and install, for this project, only material that conforms to the requirements of CAN/ULC S705.1 Material Standard. Applicators shall have their photo identification certification cards in their possession and available on the project site, for inspection upon request.
- b. The Licensed Installer shall conduct the on-site daily testing as required by the CAN/ULC S705.2 Installation Standard. The Licensed Installer shall complete the DailyWork Report as required by the CAN/ULC S705.2 Installation Standard. Upon request submit copy of Daily Work Sheets to Consultant prior to making application for payment.
- c. A copy of the Premium Spray Products Canada installer manual or guide for the application of Foamsulate ECO™ polyurethane foam must be kept on site. In cases of transition membrane installation, a copy of the manufacturer's installation manual or guide is required.
- d. Permit access to the jobsite by for Premium Spray Products Canada or Third Party Inspection Company representative for the purpose of technical assistance, verification of operator certification or the confirmation of the quality of the polyurethane foam application.

1.9 Environmental Requirements

- a. Apply insulating material only if the surface and ambient air temperatures are within the manufacturer's prescribed limits, i.e., 0°C to +35°C (+32°F to +95°F).
- b. Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets.

1.10 Surface Preparation

- a. Surfaces must be clean, dry and sound as required by CAN / ULC-S705.2. The substrate must be free of all frost, dust, oil, grease, oxidization, or any other element that may affect adhesion of the system.
- b. Galvanized surfaces should be checked to ensure no oxidization has occurred. Use of PremiCote™ 429 primer is strongly recommended.
- c. All transition membranes must be installed prior to application of the urethane foam. Transition membranes must be as listed in Premium Spray Products Canada technical binder. Contact Premium Spray Products Canada if other membranes are to be utilized. These membranes must be installed in accordance with the manufacturer's recommendations.
- d. All of the following stages must be completed prior to application of the Foamsulate ECO™ insulating foam:
 - i. installation of masonry anchoring system
 - ii. installation of wood blocking or metal angles required at all openings
 - iii. installation of any electrical or mechanical penetrations
 - iv. roofing membranes or waterproofing materials
 - v. air/vapour barrier transition membrane primer
 - vi. air/vapour barrier transition membranes
 - vii. sub-girt clip angles and sub-girt framing angle for exterior cladding
 - viii. adjacent areas have been protected via drop sheets or polyethylene masking

1.11 Conditions of Use

- a. Follow the manufacturers written instructions when spraying the polyurethane foam (refer to Premium Spray Products Canada's technical product documentation).
- b. The manufacturer's recommendations should be followed with regard to outside air temperature and substrate conditions (refer to Premium Spray Products Canada's manufacturer data).

PART 2 — MATERIALS

2.1 Insulation/ Air Barrier Material and Air barrier System: Closed cell, spray applied polyurethane foam, medium density, Closed Cell SPF meeting the requirements of CAN / ULC-S705.1. and meeting the CCMC’s Technical Guide, **Air Barrier Systems Master Format Number 07272.**

PROPERTY	TEST METHOD	CAN/ULC REQUIREMENT	FOAMSULATE ECO RESULT
Density	ASTM D1622	≥28	37 Kg/m ³
Air Performance	CCMC 07272	≤0.02	0.0005 L/s•m ² at 75 Pa
Compressive Strength	ASTM D1621	≥170	282 KPa
Dimensional Stability	% Volume Change @ -20°C @ 80°C @ 70°C, 97% ± 3%RH	≥ -1 ≥ -1 and ≤ +8 ≤ +14	-0.5 1.6 2.0
Initial Thermal Resistance	ASTM 518	Declare value	2.26 RSI (R 6.54)
Conditioned Thermal Resistance	ASTM 518 (180 days)	Declare value	2.24 RSI (R 6.46)
LTRR (Long Term Thermal Resistance) (lab test to simulate 5 years aging)	CAN/ULC S770 25mm 50mm 75mm 100mm	>1.8 for Type 1 & >2.0 for Type 2 @50mm	1.0 RSI (R 5.7) 2.0 RSI (R 5.7) 3.0 RSI (R 5.8) 4.1 RSI (R 5.9)
Water Absorption	ASTM D2842 (96 hrs)	≤4	0.3
Water Vapour Permeance	ASTM E96 (50mm)	≤ 60 ng/Pa s m ²	58 ng/Pa s m ²
Tensile Strength	ASTM D1623	≥200	406 KPa
Flame Spread Index	S 127	≤500	290
VOC	CAN/ULC S774	Report Value	1 day*

* VOC test conducted showed Foamsulate ECO met S774 values at one hour although CCMC minimum allowance is 24 hours.

2.2 Primers: As recommended in CAN/ULC S 705.2 or not in the printed standard contact Premium Spray Products Canada for a recommendation. Installers must take into account the type of substrate at the time of application.

SPECIFICATION NOTE:

FOR EXTERIOR CAVITY WALL APPLICATIONS THE FOLLOWING MAY BE REQUIRED IF THE AIR SPACE IS GREATER THAN 25MM.

2.3 Horizontal fire stopping: A preformed angle comprising at least 1.2 mm (18 ga) of steel core zinc coating, as stipulated in ASTM A 525 (galvanized steel G-90). Dimensions should be sufficient to allow the horizontal section to extend beyond the outside polyurethane foam surface in order that a 50% compressed mineral fiber fire stop can be installed in the remaining space.

- 2.4** Vertical fire stopping: A preformed angle comprising at least 0.38 mm (28 ga) of steel core zinc coating, as stipulated in ASTM A 525 (galvanized steel G-90). Dimensions should be sufficient to allow the section perpendicular to the substrate to extend beyond the outside polyurethane foam surface for the full depth of the cavity in order to close off the cavity. Sheet steel firestop angles corners should be mechanically attached to the substrate at 200 mm (8 inches) OC.

SPECIFICATION NOTE: INCLUDE THE FOLLOWING FOR ALL PROJECTS.

- 2.5** Transition and Through Wall Flashing Membrane Self Adhering: SBS modified bitumen, self adhering sheet membrane complete with a cross-laminated polyethylene film, and having the following physical properties:
- a. Thickness: 1.0mm (40 mils) min
 - b. Air Leakage: < 0.003 L/s.m²@ 75 Pa to ASTM E283-91
 - c. Vapour Permeance: 1.6 ng/Pasm² (.03 Perms) to ASTM E96
 - d. Low Temperature Flexibility: -30C to CGSB 37-GP-56M
 - e. Elongation: 200% to ASTM D412-modified
 - f. Acceptable material: Blueskin SA as manufactured by Bakor or other materials as accepted by Premium Spray Products Canada.
- 2.6** Primer for self-adhering membranes: Synthetic rubber based adhesive type, quick setting, having the following physical properties:
- a. Colour: Blue;
 - b. Weight: 0.8 kg/l
 - c. Solids by weight: 35%
 - d. Drying time (initial set): 30 minutes
 - e. Coverage ~200 sq feet per gallon for bulk
~30-50 sq feet per aerosol can
- Acceptable material: Blueskin™ Primer as manufactured by Bakor or approved alternate.

PART 3 — EXECUTION

- 3.1** Installers of spray polyurethane foam shall be trained by Premium Spray Products Canada in accordance with CAN/ULC S705.2 and be able to present a Premium Spray Products Canada valid installer ID card.
- 3.2** Apply primer for transition strips at rate recommended by manufacturer. Allow primer to dry completely before transition strip application. Installed primer to be evident beyond outside edge of transition membranes.
- 3.3** At expansion/control joints, provide backup for the membrane to accommodate anticipated movement
- 3.4** All excessively wide joints should be covered with Blueskin SA or equivalent before applying the Foamsulate ECO™.
- 3.5** Seal around all penetrations with a transition strip or other procedure in accordance with manufacturer's recommendations.
- 3.6** Connect Foamsulate ECO™ air barrier on exterior wall assembly to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers, exterior doors framing, penetrations, and other intersection conditions using transition membranes and in accordance with the manufacturer's recommendations.
- 3.7** Foamsulate ECO™ should be sprayed with a tolerance of -6.0 to + 12 mm (- ¼/ inch to + ½ inch) in relation to the specified thickness.
- 3.8** Avoid spraying the foam on any surfaces other than those indicated. Use drop sheets or masking tape to protect other surfaces. If overspray occurs once the foam has hardened, remove all overspray from nonprescribed surfaces.
- 3.9** Do not allow polyurethane foam, once applied, to be damaged during work by the other trades.
- 3.10** Spray the polyurethane foam in overlapping layers, so as to obtain a smooth, uniform surface.
- a. When applying on a flat surface of more than 30 lineal meters (100 lineal feet) in either direction, apply the first layer in 3 m (10 ft) strips at 1 m (3ft) intervals. After the curing period (± 4 hrs.) has elapsed, spray the polyurethane foam on the unfilled spaces.
 - b. In cold weather follow the same procedure for a minimum surface area of 15 lineal meters (50 lineal feet).

- 3.11** Do not allow cured spray polyurethane foam to be any closer than 75 mm (3 inches) from chimneys, heating vents, steam pipes, recessed lighting fixtures or other heat emitting sources. Do not spray the insides of any exit openings or electrical junction boxes (refer to the Premium Spray Products Canada manual).
- 3.12** In temperatures below +5°C (+40°F) transition membranes should be protected until cured or else use a version specifically formulated for low temperature application. If required mechanically fasten transition membranes to achieve the required pull strength.
- 3.13** All mechanical fasteners should be covered with polyurethane foam in order to reduce thermal bridging.

PART 4 — FIELD QUALITY CONTROL

Site Tests

- 4.1** The Licensed Installer shall conduct daily visual inspection, adhesion/cohesion testing and density measurements as outlined by the CAN/ULC S705.2-05 Installation standard. All foam installed must have a field density no less than 5% of the tested value of 37 kg m³ or 2.30 lb ft³ for Foamsulate ECO™ (>35 kg m³ or 2.18 lb ft³).
- 4.2** The Licensed Installer shall complete the DailyWork Sheet and record all information required including the results of the testing. The DailyWork Sheet shall be kept on site for routine inspection. Copies of the DailyWork Record shall be forwarded to the owner or owner's representative upon request. Copies of the DailyWork Record or monthly summaries shall be sent to the Premium Spray Products Canada Quality Assurance Program office on a monthly basis as required by Premium Spray Products Canada.
- 4.3** The costs incurred for Independent Lab daily testing and inspection of the project shall be invoiced to the Licensed Contractor and can to be added to the project cost at time of bid or added as an extra if required.

Inspection

- 4.4** Independent Inspections if required are to be conducted by an independent body meeting SCC criteria (Standards Council of Canada) for ISO 17020. Premium Spray Products Canada utilizes Exova as our independent body for Inspections.
- 4.5** Arrange for _____ third party site-inspection(s) conducted by Exova. The cost of inspections shall be included in the bid provided by the Licensed Contractor or added as an extra if required.
- 4.6** The 3rd party site-inspection shall verify conformance with the manufacturer's instructions, the CAN/ULC S705.2-05 Installation Standard and this section of the project specification.
- 4.7** If the inspection reveals any defects, the Licensed Contractor shall immediately rectify all such defects at his cost.

End of section