

UL Evaluation Report

ULC ER39311-01

Issued: October 8, 2017

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UL Category Code: ULEX7

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DIVISION: 07 00 00 — THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 20 00 – Thermal Protection

Sub-level 3: 07 21 00 – Thermal Insulation

Sub-level 4: 07 21 19 – Foamed-In-Place Insulation

COMPANY:

Accella Polyurethane Systems
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1. SUBJECT

FOAMSULATE 50 Eplus

2. SCOPE OF EVALUATION

- 2010 Edition of the National Building Code of Canada (NBCC 2010)
- 2015 Edition of the National Building Code of Canada (NBCC 2015)



The products were evaluated for the following properties:

- Density (ASTM D1622)
- Thermal Resistance at 25 mm thickness (ASTM C518)
- Water Vapour Transmission for 50 mm thickness (ASTM E96)
- Water Absorption (ASTM D2842)
- Dimensional Stability (ASTM D2126)
- Emissions – time to occupancy (CAN/ULC-S774)
- Surface Burning Characteristics (CAN/ULC-S102, CAN/ULC-S127)

3. REFERENCED DOCUMENTS

- **ULC:**
 - CAN/ULC-S102, *Standard Test Method for Surface Burning Characteristics of Building Materials and Assemblies*, Seventh Edition, July 2010
 - CAN/ULC-S127, *Standard Corner Wall Method of Test for Flammability Characteristics of Non-melting Foam Plastic Building Materials*, Sixth Edition, December 2014
 - CAN/ULC-S774, *Standard Laboratory Guide for the Determination of Volatile Organic Compound Emissions from Polyurethane Foam*, March 2009 (reaffirmed in January 2014)
- **ASTM:**
 - ASTM D1622-08, *Test Method for Apparent Density of Rigid Cellular Plastics*
 - ASTM C518-10, *Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*
 - ASTM E96-13, *Test Methods for Water Vapour Transmission of Materials*
 - ASTM D2842-10, *Test Method for Water Absorption of Rigid Cellular Plastics*
 - ASTM D2126-09, *Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging*

4. USES

FOAMSULATE 50 Eplus spray-applied polyurethane system is used in wood-frame construction in open cavities.

5. PRODUCT DESCRIPTION

5.1 General:

The product is a light yellow, low-density, spray-in-place, semi-flexible, open cell foamed plastic. The product consists of an isocyanate and a resin, which are mixed on-site by a qualified installer using appropriate pumping equipment in a 1:1 volumetric ratio.

6. INSTALLATION

6.1 General:

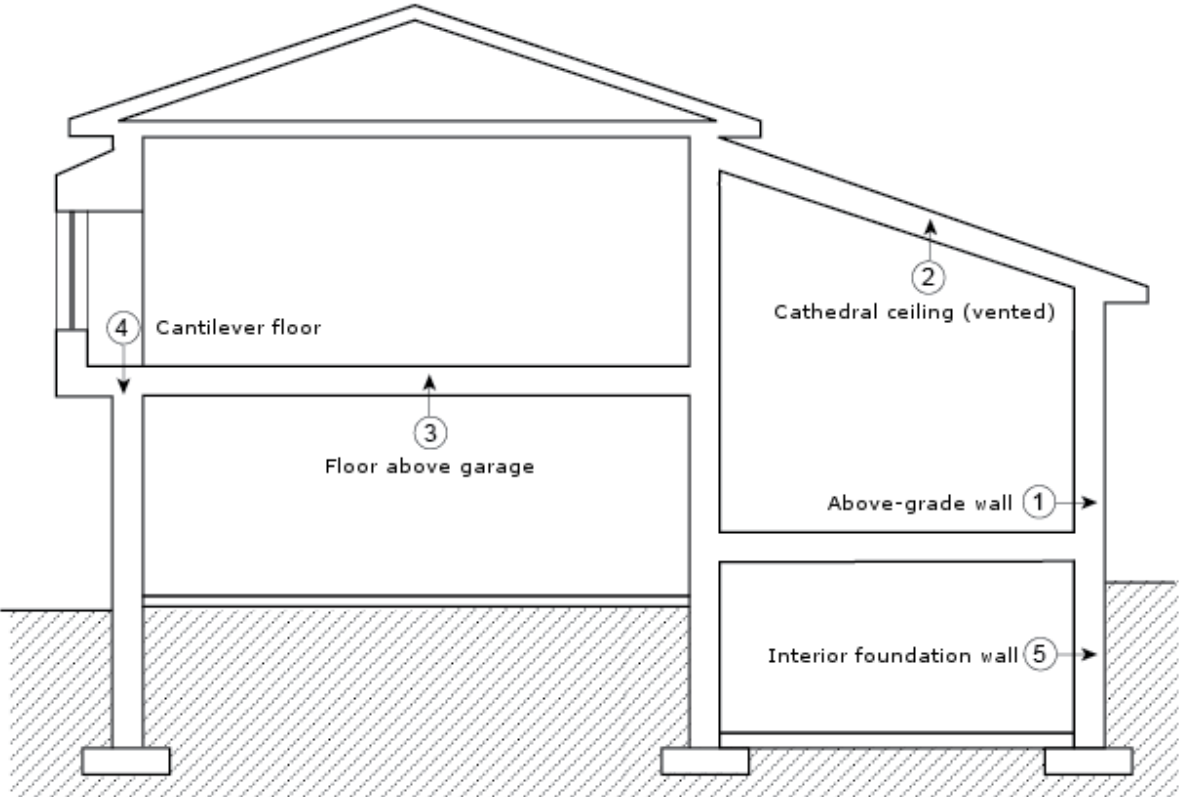


Illustration 1. Application locations in a wood-frame construction in open cavities

7. CONDITIONS OF USE

7.1 General:

ULC's compliance opinion determined by the "Foamsulate 50 Eplus" being used in accordance with the conditions and limitations set out below.

- As specified by the manufacturer, the product must be manufactured on-site by qualified installers trained and approved by Accella Polyurethane Systems and applied in accordance with the Accella Polyurethane Systems installation manual.

- The product can be installed in new or retrofit constructions. In either case, the product must be installed in open cavities in the following locations of a wood-frame construction that meets the requirements of the NBCC 2010 and the NBCC 2015:

- exterior walls including perimeter joists;
- cathedral ceilings with a vented air space as required by the NBCC 2010 and the NBCC 2015;
- floors separating living spaces from a garage;
- cantilever overhang floors; and
- interior below-grade foundation walls.

The locations above are illustrated in Illustration 1.

- The building envelope where the product is installed must conform to the requirements of the NBCC 2010 and the NBCC 2015 for vapour barriers, air barriers, and moisture proofing (interior below-grade walls).

- Where there may be occupants present in other parts of the building, the installer must ensure that the spraying area is isolated and negatively pressurized by using an air exhaust rate of 0.3 air changes per hour for a minimum of 24 hours. An independent toxicological assessment determined that this ventilation rate must also be in effect for 24 hours before occupancy is permitted in the newly insulated area.

- The sprayed material should fully cover the surfaces between the studs, joists and other framing members. The surfaces to be covered should be clean, dry, at an appropriate temperature so as to not inhibit the foam reaction or adhesion, and not contaminated in such a way that would negatively impact the adhesion of the foam to the surface. As required in Article 9.25.2.3., Installation of Thermal Insulation, of Division B of the NBCC 2010 and the NBCC 2015, the insulation must be installed so that there is a fairly uniform foam thickness over the entire face of the insulated area.

- The interior side of the applied semi-flexible polyurethane insulation must be covered with an approved thermal barrier as per Article 9.10.17.10., Protection of Foamed Plastics, of Division B of the NBCC 2010 and the NBCC 2015.

- The product must be kept away from open flame and heat-emitting devices.

- The temperature of the environment of the insulation must not exceed 70°C.

- The product is moisture sensitive and must not be used in environments where it may come in contact with water. The product must be installed within six (6) months from the date of manufacture. After six (6) months, the product is to be considered expired, and cannot be used.

- The isocyanate and resin components shall be marked by the phrase “UL ER39311” on the smallest unit container of product.
- The installation procedure must follow the manufacturer’s instruction manual. A copy of the manual must be available at the job site at all times during the installation for review by the authority having jurisdiction.

7.4 Manufacturing Locations:

ACCELLA POLYURETHANE SYSTEMS LLC
 100 ENTERPRISE DR
 CARTERSVILLE GA 30120-8220
 USA

8. SUPPORTING EVIDENCE

Accella Polyurethane Systems has submitted technical documentation for UL’s review. Testing was conducted at laboratories recognized as ISO 17025 compliant. The test data submitted for this product is summarized below.

8.1 Performance Requirements

8.1.1 Test Results

Table 8.1.1 Test Results for Performance Requirements

Property		Unit	Result	Requirement
Density		kg/m ³	7.0	≥ 6.8
Thermal Resistance at 25 mm thickness		m ² .°C/W	0.59	Report Value
Water Vapour Transmission for 50 mm thickness		ng/(Pa·s·m ²)	1548	≥ 1400
Water Absorption		% volume	21	Report Value
Dimensional changes when exposed to:	80°C and ambient R.H.	% volume	Max. +10	-3.1
			Min. -15	
	70°C and 97 ± 3% R.H.		Max. +14	-5.2
			Min. -15	
	-29°C and ambient R.H.		–	-0.7
			Min. -1	
Emissions – time to occupancy		–	Pass	^a

Note to Table 8.1.1:

^aThe volatile organic compound (VOC) emissions under consideration were measured with an assumed room ventilation rate of 0.3 air changes per hour as per the NBC requirements for new constructions. The determination of emissions and room concentration calculations were done by an independent, third party laboratory. An independent toxicological report recommends a residential time to occupancy of one (1) day. The testing and evaluation and their results do not purport to be conclusive with respect to the impact on health.

8.1.2 Fire Test Results

Table 8.1.2 Fire Test Results^β

Property	Requirement	Result
Flame Spread Rating	Report Value	420
Smoke Developed	Report Value	245

Notes to Table 8.1.2:

^βThe sample thickness for the fire testing was not uniform and ranged from 100 mm to 254 mm.

9. IDENTIFICATION

The FOAMSULATE 50 Eplus spray-in-place plastic foam described in this evaluation report is identified by a marking bearing the report holder's name (Accella Polyurethane Systems LLC), the plant identification, and the evaluation report number UL ER39311. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

10. USE OF UL EVALUATION REPORT

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