



Evaluation Report CCMC 13643-R Foamsulate 50 Open Cell

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Foamsulate 50 Open Cell”, when used as a thermal insulation in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2010:

- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Sentence 9.25.2.2.(1), Insulation Materials

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

2. Description

The product is a Type 1, spray-in-place, low-density, semi-flexible plastic foam that has an open-cell structure. The product consists of an isocyanate and a resin, which are mixed on-site by a qualified installer using positive displacement equipment in a 1:1 fixed ratio.

The final cured product is yellow and has a density of 7.00 kg/m³. At a 25.4-mm thickness the thermal resistance is 0.59 m²-C/W.

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “Foamsulate 50 Open Cell” 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 Premium Spray Products with subsequent field auditing of installers by Exova.¹ Exova is the third-party certification organization specified by Premium Spray Products to certify the training program and provide follow-up inspections of qualified installers who are licensed to spray semi-flexible, urethane-based foam insulation in accordance with the Premium Spray Products Installer's 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 NBC 2010:
 - exterior walls including perimeter joists;
 - cathedral ceilings with a vented air space as required by the NBC 2010;
 - floors separating living spaces from a garage;
 - cantilever overhang floors; and
 - interior below-grade foundation walls.

The application locations are illustrated in Figure 1.

- The building envelope where the product is installed must conform to the requirements of the NBC 2010 for vapour barriers, air barriers, and dampproofing (interior below-grade walls).
- For retrofit applications, whereby there may be occupants in the unaltered part of a building, the qualified installer must ensure that the spraying area is isolated and negatively pressurized by using an exfiltration rate of 0.3 air changes per hour for at least one

(1) day. An independent toxicological assessment determined that this ventilation rate must also be in effect for one (1) day before occupancy is permitted in the newly insulated suite.

- The sprayed material should completely cover the surfaces between the studs, joists and other framing members. The surfaces to be covered should be clean, dry, and not covered in frost, oil, grease, dust or other unsuitable material. As required in Article 9.25.2.3., Installation of Thermal Insulation, of Division B of the NBC 2010, the insulation must be installed so that there is a reasonably uniform insulating value 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 NBC 2010.
- The insulation must be kept away from heat-emitting devices, such as recessed light fixtures and chimneys at the minimum distance required by building regulations and safety codes.
- The maximum in-service temperature of the insulation must not exceed 70°C.
- The product must not be used where it may come in contact with water and must not be installed after its expiry date of six (6) months from the date of manufacture.
- The isocyanate and resin components must have their respective containers (i.e., drums) identified by the phrase “CCMC XXXXX-R.”
- 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 building official.

[1](#) *The Exova field quality assurance program (FQAP) calls for periodic audits to be performed on the installers, usually random inspections with some mandatory inspections of larger projects. Building officials may contact Exova at (905) 822-4111, ext. 384 or 582 if they require an inspection for a specific job site and/or the building official deems it necessary. In cases where the installation is deemed non-conforming by Premium Spray Products and is not being remedied by the installer, Exova/Premium Spray Products will inform the owner/architect/building official of the non-conforming installation.*

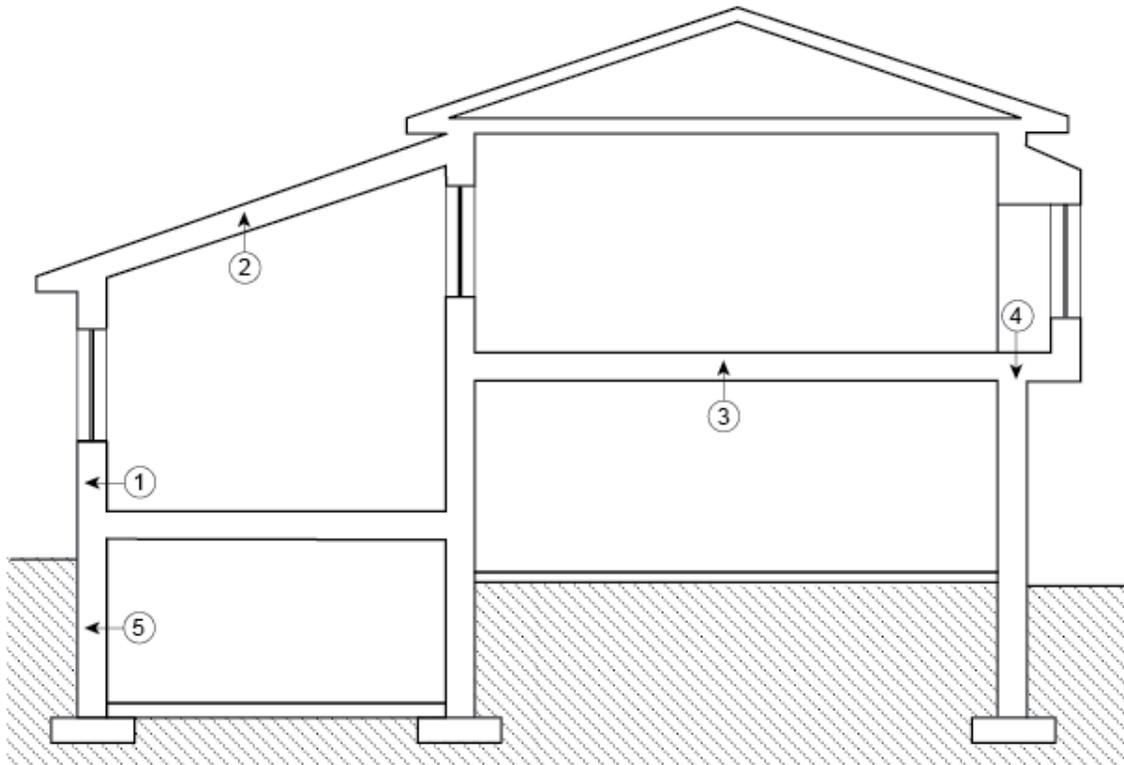


Figure 1. Application locations in a wood-frame construction in open cavities

1. above-grade wall
2. cathedral ceiling (vented)
3. floor above garage
4. cantilever floor
5. interior foundation wall

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Performance Requirements

4.1.1 Test Results

Table 4.1.1 Test Results for Performance Requirements

Property		Unit	Requirement	Result
Density		kg/m ³	≥ 6.8	7.0
Thermal resistance at 25-mm thickness		m ² ·C/W	Report value	0.59
Water vapour transmission for 50-mm thickness		ng/(Pa·s·m ²)	≥ 1 400	1 548
Water absorption		%	Report value	21
Dimensional changes when exposed to	80°C and ambient R.H.	% volumetric	Min. -15	-3.1
			Max. +10	
	70°C and 97 ± 3% R.H.		Min. -15	-5.2
			Max. +14	
	-29°C and ambient R.H.		Min. -1	-0.7
			—	
Emissions – time to occupancy		—	1	Pass

Note to Table 4.1.1:

[1](#) The 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 Exova. An independent toxicological report recommends a residential time to occupancy of one (1) day. While the testing and evaluation represent the current state-of-the-art in toxicological evaluations, such tests and their results do not purport to be conclusive with respect to the impact on health.

5. Other Technical Evidence

5.1 Additional Performance Data Requested by the Report Holder

5.1.1 Fire Test Results

Table 5.1.1 Fire Test Results^{1,2}

Property	Requirement	Result
Flame-spread rating (CAN/ULC-S127)	Report value	420
Smoke development (CAN/ULC-S102)	Report value	245

Notes to Table 5.1.1:

- 1 The sample thickness for the fire testing was irregular and ranged from 100 mm to 254 mm.
 - 2 The samples tested were not cut as per Sentence 9.10.3.2.(2), Flame-Spread Ratings, of Division B of the NBC 2010.
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Report Holder

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