



Evaluation Report CCMC 12697-R SEALECTION 500®

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “SEALECTION 500®,” 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 (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(b) of 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:
 - Clause 9.25.2.2.(1)(g), Insulation Materials

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

Ruling No. 95-10-29 (12697-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2007-01-19 pursuant to s.29 of the *Building Code Act*, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

2. Description

The product is a spray-in-place, low-density, semi-flexible plastic foam that has an open-cell structure. The foaming system consists of two components, A100 isocyanate and B500 resin, which are mixed on site by a qualified installer with fixed-ratio positive displacement equipment.

Once the product has expanded the open cells contain air. The chemical reaction that occurs while the product is being installed takes place in seconds, with less than 15 minutes needed for curing. After curing, the product remains semi-flexible.

The final cured product is yellow and has a density of 8.3 kg/m³. At a thickness of 25.4 mm, the design thermal resistance is 0.61 m²·K/W (R3.48).

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the "SEALECTION 500®" being used in accordance with the conditions and limitations set out below.

- The product must be applied on-site by qualified installers trained and approved by Demilec Inc.
- Canadian Urethane Foam Contractors' Association (CUFCA)⁽¹⁾ is the third-party certification organization specified by Demilec Inc. to conduct random follow-up field inspections of qualified installers who are trained to spray semi-flexible urethane-based foam insulation in accordance with the "SEALECTION 500®" Installer's Manual.
- The product can be used in new or retrofitted construction. The product is to be installed in open cavities in the following locations of wood-frame construction meeting the requirements of the NBC 2015:
 - exterior walls including perimeter joists;
 - cathedral ceilings with a vented air space as required by the NBC 2015;
 - 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 in which this product is installed must conform to the requirements of the NBC 2015 for vapour barriers, air barriers, and dampproofing (interior below-grade walls).
- For retrofit applications, the working area must be 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 2015, 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 2015.
- 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 into contact with water and must not be installed after its expiry date of six (6) months from the date of manufacture.
- The A and B components must have their respective containers (i.e. drums) identified by the phrase "CCMC 12697-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.

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1. Periodic CUFCA audits of the installer are conducted. In cases where the installation is deemed non-conforming and is not being remedied by the installer, CUFCA will inform the owner, architect and building official of the non-conforming installation. The CUFCA policy is to conduct occasional random inspections and mandatory inspections of larger projects. Building officials may contact CUFCA (1-866-GO-SPRAY) and require an inspection for a specific job site if the building official deems it necessary.
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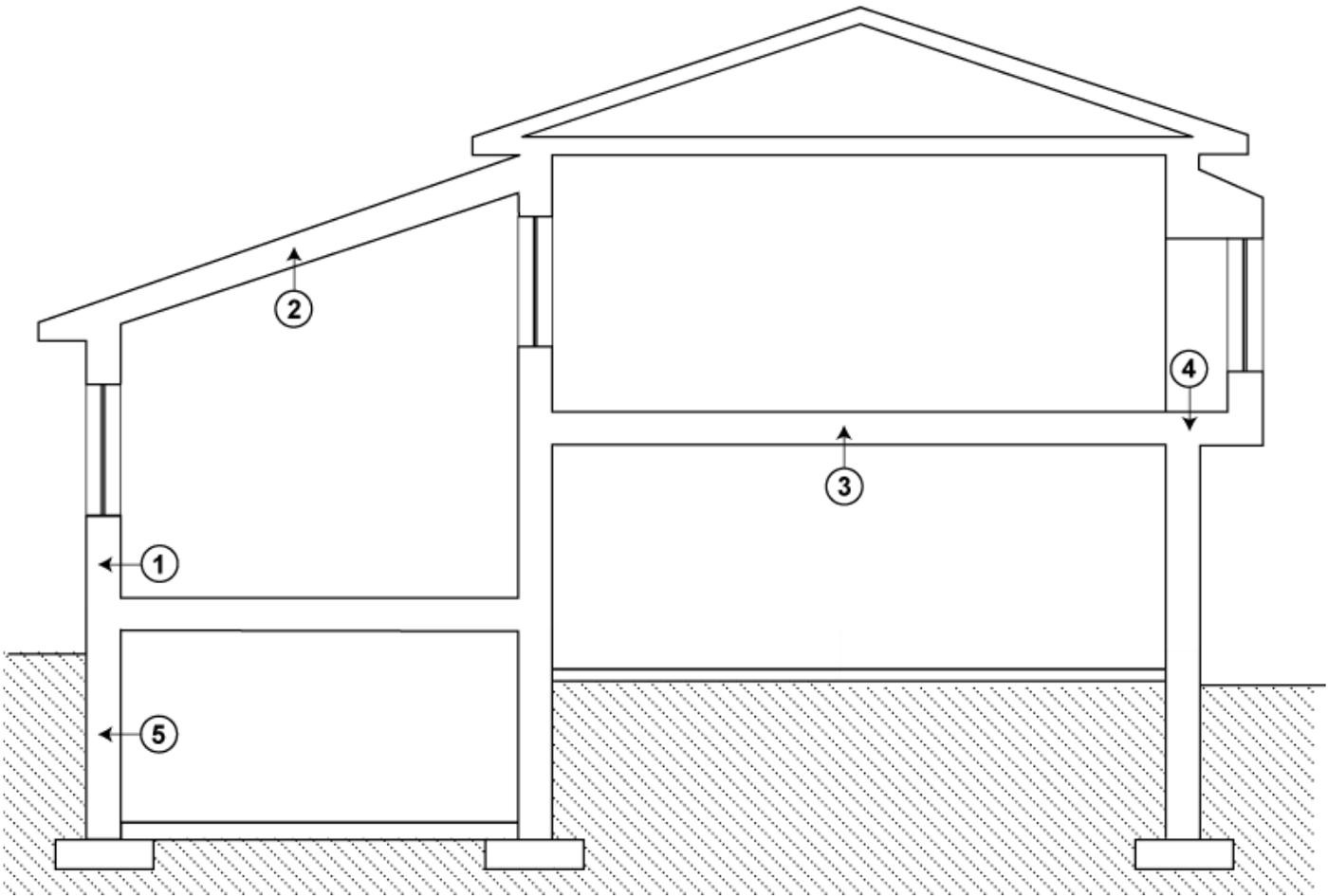


Figure 1. Application locations in wood-frame construction in open cavities

1. exterior, 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

Table 4.1.1 Results of Testing of “SEALECTION 500®” – Type 1, Open-cell Urethane

Property	Requirement	Result
Density (kg/m ³)	> 6.8	8.3
Thermal resistance at 25.4-mm thickness (m ² ·K/W)	Report value	0.61
Water vapour transmission for 25-mm thickness (ng/(Pa·s·m ²))	> 2 800	1 300 ⁽¹⁾
Water absorption (%)	Report value	50
Emissions during aging	⁽²⁾	Pass

Table 4.1.1 Results of Testing of “SEALECTION 500®” – Type 1, Open-cell Urethane (cont.)

Property		Requirement	Result
Dimensional changes (% volumetric) when exposed for:	28 days at 80°C and ambient RH	Min. -15	-4.4
		Max. +10	
	28 days at 70°C and 95 ± 3% RH	Min. -15	-5.1
		Max. +14	
	28 days at -29°C and ambient RH	Min. -1	-0.5
		Max. —	

Notes to Table 4.1.1:

1. Although the water vapour transmission is below the specified target, additional testing to simulate service conditions for the service life of this proprietary product was conducted. The resulting performance was deemed acceptable.
2. The Volatile Organic Compound (VOC) emissions under consideration were below the detection limit after one (1) day with a room ventilation rate of 0.3 air changes per hour as per the NBC 2015. The determination of emissions and room concentration calculations were done by the Saskatchewan Research Council. Reported results from emission tests indicate that the product would be unlikely to cause a major adverse health problem. While the testing and evaluation represent the current state-of-the-art in toxicological evaluation, 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**

Data in this section does not form part of CCMC's opinion in Section 1.

5.1.1 Fire Performance**Table 5.1.1.1 Fire Test Results for “SEALECTION 500®”(1)(2)**

Property	Requirement	Result
Flame-spread rating ⁽³⁾ (CAN/ULC-S102 and CAN/ULC-S127)	Report value	435
Smoke development	Report value	240

Notes to Table 5.1.1.1:

1. The thicknesses of the specimens tested varied from 100 mm to 150 mm.
2. The specimens tested were not cut as per Sentence 9.10.3.2.(2), Flame-Spread Ratings, of Division B of the NBC 2015.
3. Contact Demilec Inc. for a flame-spread rating when required for code compliance.

Report Holder

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Plant(s)

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