



## Evaluation Report CCMC 13656-R Insulthane 1100

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### 1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Insulthane 1100,” 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), 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 the CCMC evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 14-07-303 (13656-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 2014-09-23 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 Type 2, spray-in-place, low density, semi-flexible plastic foam that has an open-cell structure. The product consists of Elastochem 1100 Part A isocyanate and Elastochem 1100 Part B 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 a cream colour and has a density of  $17.2 \text{ kg/m}^3$ . At a thickness of 25.4 mm, the thermal resistance is  $0.69 \text{ m}^2 \cdot ^\circ\text{C/W}$ .

### 3. Conditions and Limitations

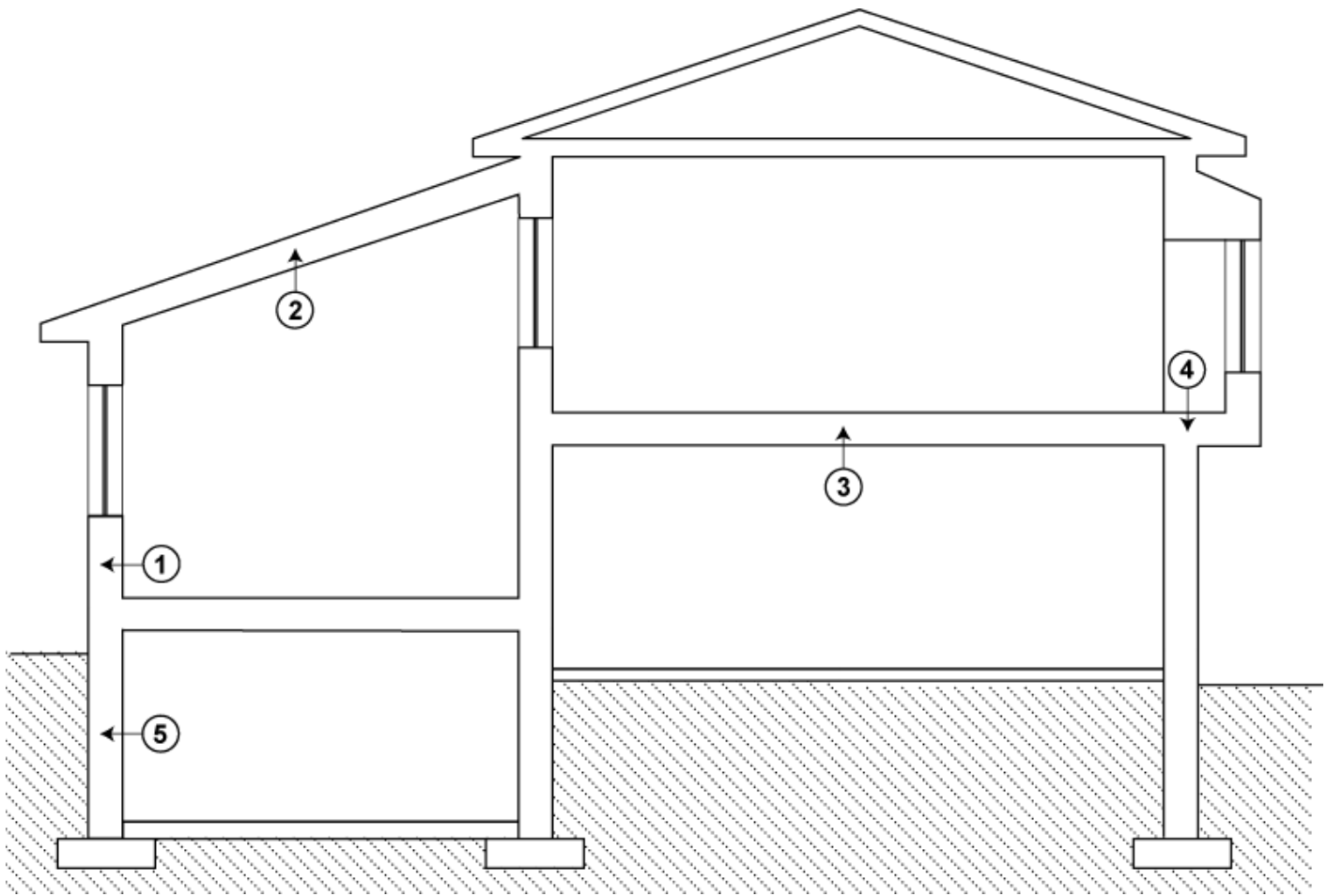
The CCMC compliance opinion in Section 1 is bound by the “Insulthane 1100” being used in accordance with the conditions and limitations set out below:

- The product must be applied on-site by qualified installers trained and approved by Elastochem Specialty Chemicals Inc.
- As specified by the manufacturer, the product must be manufactured on-site by qualified installers trained and approved by Elastochem Specialty Chemicals Inc. with subsequent field auditing of installers by UFC.<sup>1</sup> UFC is the third-party certification organization specified by Elastochem Specialty Chemicals Inc. 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 Elastochem Specialty Chemicals Inc. Installer’s Manual.

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1. The UFC field quality assurance program (FQAP) calls for periodic audits of the installers that are usually random inspections with some mandatory inspections of larger projects. Building officials may contact UFC at 905-702-2555 to discuss an inspection for a specific job site if they deem it necessary. In cases where the installation is deemed non-conforming by UFC/Elastochem Specialty Chemicals Inc. and is not being remedied by the installer, UFC/Elastochem Specialty Chemicals Inc. will inform the owner/architect/building official of the non-conforming installation.

- 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 in a wood-frame construction that meets the requirements of the NBC 2015 (see Figure 1):
  - 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 building envelope where the 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 whereby there may be occupants in the unaltered part of the 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 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 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 with the phrase “CCMC 13656-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.



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

- 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 the CCMC 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 the Performance Requirements of the Product**

Property		Unit	Requirement		Result
Density		kg/m <sup>3</sup>	> 6.8		17.2
Thermal resistance for 25 mm thickness		m <sup>2</sup> ·°C/W	Report value		0.69
Water vapour transmission for 25 mm thickness		ng/Pa·s·m <sup>2</sup>	> 800 (Type 2)		1 175 (average of 3 tests)
Water absorption		%	< 5 (Type 2)		1.77 (average of 4 tests)
Dimensional changes when exposed to	80°C and ambient relative humidity (RH)	(% volumetric)	Min. -15	Max. +10	-9.0 (average of 3 tests)
	70°C and 97 ± 3% RH		Min. -15	Max. +14	-2.3 (average of 3 tests)
	-29°C and ambient RH		Min. -1	-	0.3 (average of 3 tests)
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 carried out by the Saskatchewan Research Council. 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 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 the CCMC opinion in Section 1.

#### 5.1.1 Fire Protection Requirements

**Table 5.1.1.1 Results of Testing the Fire Protection Requirements of the Product<sup>1,2</sup>**

Property	Requirement	Result
Flame-spread rating <sup>3</sup> (CAN/ULC-S102 and CAN/ULC-S127)	Report value	257
Smoke development	Report value	495

**Notes to Table 5.1.1.1:**

1. The thickness tested was 76 mm.
2. The samples tested were not cut as per Sentence 9.10.3.2.(2) of Division B of the NBC 2015.
3. Contact Elastochem Specialty Chemicals Inc. for a flame-spread rating when required for Code compliance.

## Report Holder

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## Plant(s)

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