



Evaluation Report CCMC 12420-R

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Enviro-Shield

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Enviro-Shield” when used as a system to install thermal insulation in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2005:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Article 9.25.2.2. Insulation Materials
 - Article 9.25.2.4. Installation of Loose-Fill Insulation

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report Holder.

Ruling No. 03-02-91 (12420-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 2003-03-18 (revised on 2010-06-22) 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 “Enviro-Shield” system is manufactured on the job site. The system comprises three components: the thermal insulating product, the frame wall construction, and the installation method.

The insulating product is loose-fill cellulose insulation produced using the advanced fibre technology system and bears a CCMC Evaluation Listing Number. The framing consists of conventional 38-mm x 140-mm or 38-mm x 89-mm wood studs or galvanized steel studs spaced at either 400 mm or 600 mm. The insulation is installed behind either a 6 mil CGSB-certified vapour barrier or a woven polypropylene mesh.

Installing the product in walls consists of piercing the vapour barrier or the mesh near the top of the cavity and lowering the blowing hose into the cavity (see Figure 1). By carefully controlling the filling time and filling pressure with conventional or modified conventional blowing equipment, the cavity can be completely filled to a specified design density of 48 kg/m³ within a tolerance of 10%. Installing the product in cathedral ceilings is the same as for walls except that cavities are filled to a minimum specified density of 40.5 kg/m³, a ventilation system is included (see Figure 2), and cavities longer than 3 m must be blown in stages.

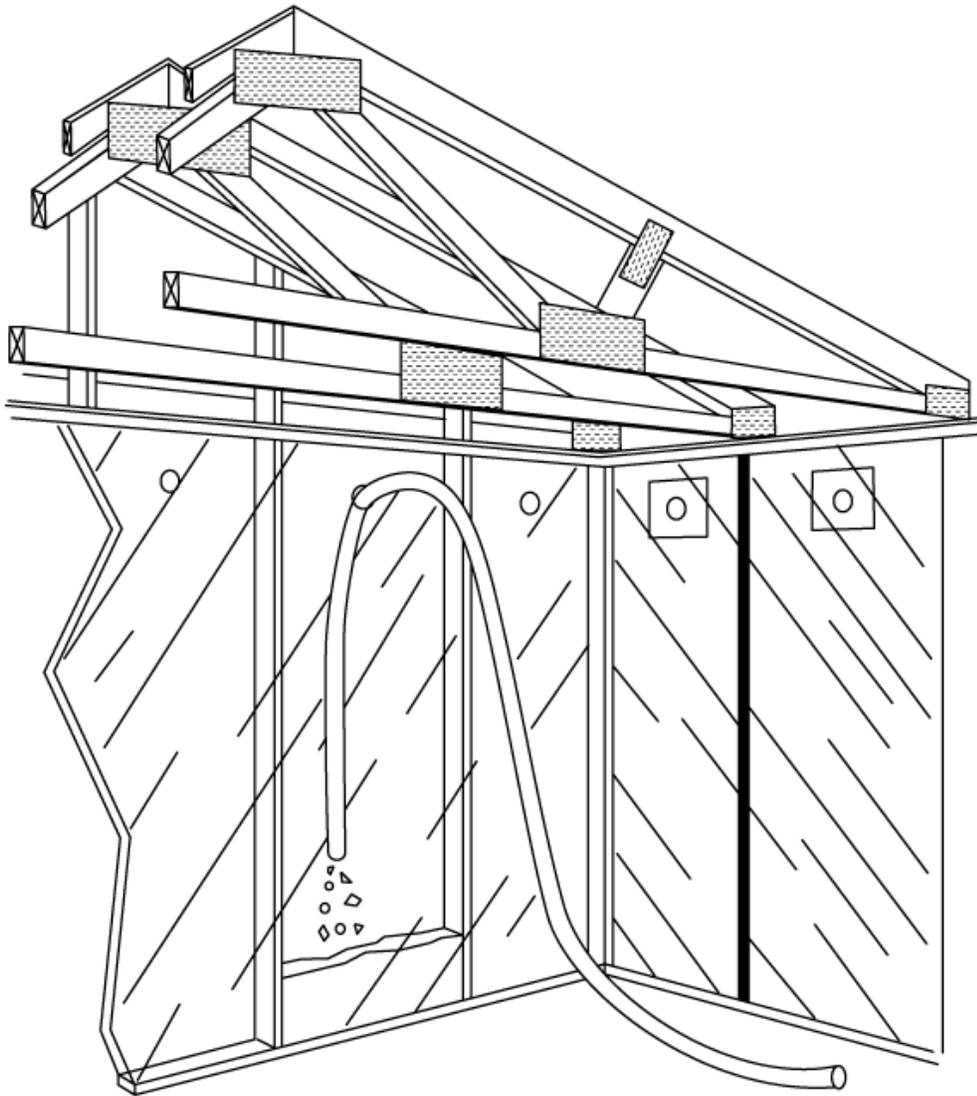


Figure 1. "Enviro-Shield" for walls

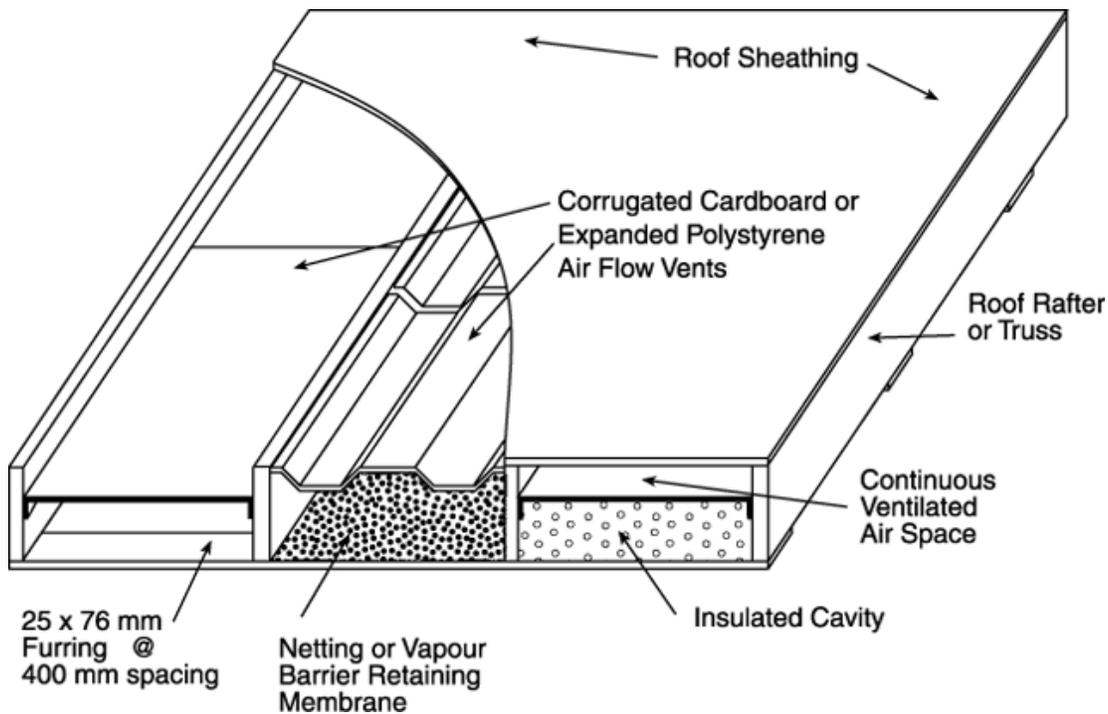


Figure 2. Section of a typical sloped ceiling assembly – 600 mm centre construction

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “Enviro-Shield” being used in accordance with the conditions and limitations set out below.

3.1 Below-Grade Walls:

Installation of the loose-fill cellulose insulation system shall be limited to basement walls that:

- have an explicit drainage layer on the exterior of the basement wall from ground level to the footing (e.g. semi-rigid dimpled polyethylene products, exterior insulations); or
- have waterproofing on the exterior face of the concrete; or
- have dampproofing on the exterior face, where the concrete is free of defects (any cracks must be sealed to prevent future water entry, whether or not there is evidence of past or current water entry); or
- are not subject to flooding and not situated in areas with a high water table (< 2.5 m from ground surface) or that are susceptible to sewer backup.

Installations on cast-in-place concrete basement walls must not occur until 45 days after casting of the concrete.

3.2 Above-Grade Walls:

The following limitations apply when the system is used with steel studs:

- 25% of the insulating value must be on the outside of the steel studs (i.e. insulative sheathing); and
- the density of the galvanizing coating on the steel studs must be 275 g/m² or greater.

3.3 Cathedral Ceilings:

The system can only be installed in cathedral ceilings that incorporate a ventilation system in accordance with Subsection 9.19.1., Venting, of Division B of the NBC 2005.

3.4 General:

The thermal insulating product must be cellulose insulation produced using the advanced fibre technology and bearing a valid CCMC Evaluation Listing Number.

The blowing equipment used must be any commercially available machine modified according to Thermo-Cell's instructions.

The insulation must be kept away from heat-emitting devices, such as recessed light fixtures, chimneys, and propane or natural gas sources, at a distance of at least 75 mm or the distance required by the local authority having jurisdiction.

Pierced vapour barriers must be repaired in accordance with current trade practice.

Installation of the "Enviro-Shield" system must be carried out by a manufacturer certified installer in accordance with the conditions and limitations of this Report and the manufacturer's installation instructions.

4. Technical Evidence

CCMC's Technical Guide for "Enviro-Shield" sets out the nature of the technical evidence required by CCMC to enable it to evaluate a product as an acceptable or alternative solution in compliance with the NBC 2005. The Report Holder has submitted test results for CCMC's evaluation. Testing was conducted at independent laboratories recognized by CCMC. The corresponding test results for "Enviro-Shield" are summarized below.

4.1 NBC 2005 Compliance Data for "Enviro-Shield" on which CCMC Based its Opinion in Section 1

4.1.1 Performance Requirements

Density

The measured densities ranged from 45 to 52 kg/m³ in walls and from 43 to 44 kg/m³ in ceilings. The density of the applied product in walls was determined on wall sections using 89-mm-deep and 140-mm-deep spaced at 400 mm and 600 mm. Ceiling densities were determined on roof sections containing 254-mm-deep rafters and 355-mm-deep trusses spaced at 600 mm.

Thermal Resistance

The thermal resistance was measured on samples with densities ranging from 48.0 to 51.24 kg/m³ and the respective thermal resistance per unit thickness ranged from 25.4 to 25.9 (m²·K/W)/m. Using 25.4 (m²·K/W)/m for design calculations, the thermal resistance of the insulation is 3.56 m²·K/W for a 140-mm-thick wall and 2.26 m²·K/W for an 89-mm-thick wall.

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