



National Research
Council Canada

Conseil national
de recherches Canada

Institute for
Research in
Construction

Institut de
recherche en
construction

CCMC 12307-R

CCMC

*EVALUATION
REPORT*

DIVISION	07215.5
Issued	1992-04-16
Re-evaluated	2005-02-14
Re-evaluation due	2008-04-16

BENO-MAT

Les Entreprises Benolec Ltée
1451, rue Nobel
Sainte-Julie (Québec) Canada
J3E 1Z4

Tel.: (450) 922-2000

Fax: (450) 922-4333

E-mail : info@benolec.com

Web Site : www.benolec.com

This Report is provided without representation, warranty, or guarantee of any kind, expressed or implied, and the National Research Council of Canada (NRC) provides no endorsement for any evaluated material, product, system or service described herein.

NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this Report are directed to those who have the appropriate degree of experience to use and apply its contents.

NRC accepts no responsibility whatsoever arising in any way from any and all use or reliance on the information contained in this Report. NRC is not undertaking to render professional or other services for or on behalf of any person or entity nor to perform any duty owed by any person or entity to another person or entity.

1. Purpose of Evaluation

The proponent sought confirmation from the Canadian Construction Materials Centre (CCMC) that “BENO-MAT” can serve as thermal insulation in above grade frame walls, in compliance with the intent of the National Building Code of Canada (NBC) 1995.

“BENO-MAT” comprises three components: the thermal insulating product, the frame wall construction, and the installation method/equipment. The requirements for the three components of the system are outlined in sections 3.2 through 3.4.

2. Opinion

Subject to the limitations and conditions stated in this report, test results and assessments provided by the proponent show that “BENO-MAT” complies with CCMC’s Technical Guide for Loose-Fill Cellulose in Walls, Masterformat number 07215.5, dated 2002-06-20, and provides a level of performance equivalent to that required in:

- NBC 1995, Article 9.25.2.2.

“BENO-MAT” is expected to provide a thermal resistance of 2.27 m²·°C/W (R12.9 in British units) for an 89-mm thick wall and a thermal resistance of 3.58 m²·°C/W (R20.3 in British units) for a 140-mm thick wall.

Canada Mortgage and Housing Corporation permits the use of this product in construction financed or insured under the National Housing Act.

3. Description

3.1 General

“BENO-MAT” is manufactured on the job site. It uses a porous, polyester spun-bonded membrane stapled to wood frame members to contain the “BENO-THERM ” or “Therm-O-Light” loose-fill cellulose insulation material, which is injected successively into each wall cavity. (See Figure 1.)

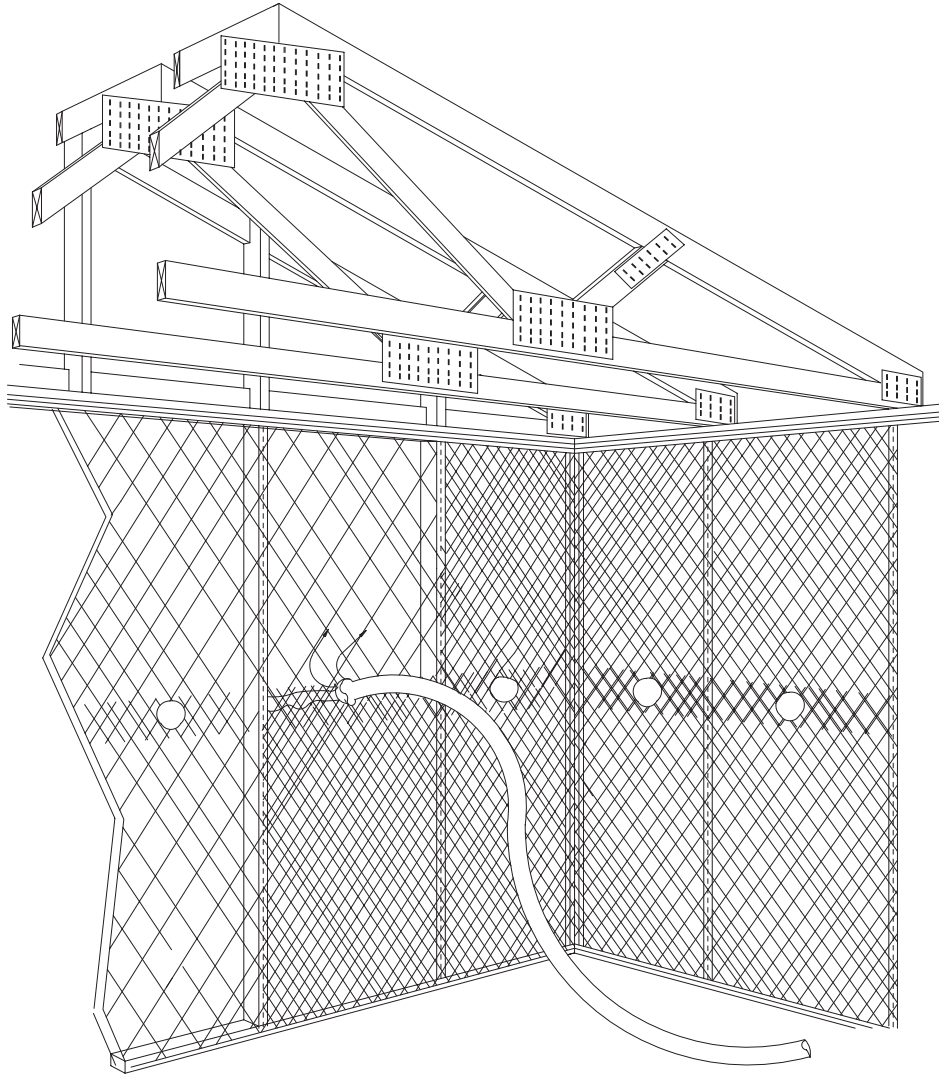


Figure 1. “BENO-MAT injection process”

3.2 Thermal insulating product

The base material used in forming the “BENO-MAT” on site is the loose-fill cellulose insulation material manufactured by Benolec Ltée under the name of BENO-THERM, or the “Therm-O-Light” product manufactured by Therm-O-Comfort Ltd. Both conform to the requirements of CAN/ULC-S703 “Cellulose fibre insulation (IFC) for Buildings.” BENO-THERM and Therm-O-Light presently hold an active CCMC listing, numbers 09232-L and 08774-L, respectively.

3.3 Frame Wall Construction

This evaluation report relates to a typical wood frame construction using either 38 mm by 89 mm or 38 mm by 140 mm studs placed 400 mm or 600 mm on centre. The wall is provided with a polyethylene vapour barrier on the inside and permeable or semi-permeable sheathing material, such as waferboard, fibreboard, glass-fibre thermal insulating sheathing or plywood, on the outside. The exterior sheathing must conform to Article 9.25.1.2. of the 1995 NBC.

3.4 Installation Method/Equipment

This evaluation report relates to the loose-fill cellulose insulation injected into the wall cavity by a specified commercial blowing machine and placed in the wall cavity behind the polyester membrane (tradename “BENO-MAT”).

The quality management system of Les Entreprises Benolec Ltée is registered to ISO 9002 by Quasar Q807124.

4. Usage and Limitations

- The installation must be in accordance with the manufacturers’ current installation instructions contained in the document entitled “BENO-MAT - injection à sec - troisième édition.” This document forms the basis of the training program undergone by an installer certified by Benolec Ltée. The document outlines the procedures to be followed to deliver the “BENO-MAT” product on site, specifically the placement of the “BENO-MAT” membrane, calculation of thermal insulating product required to deliver the specified density, and the proper injection procedure to deliver an even density throughout the wall cavity.

- The thermal insulating product BENO-THERM or Therm-O-Light shall continue to have an active CCMC Evaluation Listing confirming conformance to Section 3.2 of this report.
- The specified density of 48 kg/m³ (3.0 lbs./ft.³) shall be delivered in the wall cavity; this produces a bulge in the “BENO-MAT” membrane of approximately 12.5 mm to 19 mm (1/2 in. to 3/4 in.) in accordance with the predetermined coverage tables supplied by Benolec Ltée. The coverage tables have been prepared by multiplying the specified density by the wall cavity dimensions with an increased wall cavity depth of 19 mm (3/4 in.).
- To be permitted to apply the “BENO-MAT,” the installer must be certified by Benolec Ltée, must use the specified equipment, and must follow the uses specified in this report.
- To avoid irritation to the skin, eyes and throat, the installer is required to wear a mask during material installation.
- The insulation shall be kept at least 75 mm (or as required in building regulations or safety codes) from heat-emitting devices, such as recessed light fixtures and chimneys.
- The “BENO-MAT” system shall be identified on the membrane with the following information: “BENO-MAT,” and the phrase “CCMC No. 12307-R.”

5. Performance

Thermal resistance of the “BENO-MAT” product was determined with a Heat Flow Meter (HFM) apparatus on a 152-mm thick specimen at a mean temperature of 24°C in accordance with ASTM Test Method C 518-85. Three specimens, conditioned to constant weight in an atmosphere controlled at 21°C and 50% relative humidity, were placed horizontally, one at a time, in a 61 cm by 61 cm HFM apparatus and tested under conditions of an upward heat flow.

The densities of the specimens were 52.4, 52.1, and 52.1 kg/m³, based on the average delivered density in the test program of 52.2 kg/m³ and the respective thermal resistance per unit thickness was 25.5, 25.9 and 25.3 m².°C/W.

Note: Readers are asked to refer to limitations imposed by NRC on the interpretation and use of this report. These limitations are included in the introduction to CCMC's Registry of Product Evaluations, of which this report is part.

Readers are advised to confirm that this report has not been withdrawn or superseded by a later issue by referring to <http://irc.nrc.gc.ca/ccmc>, or contacting the Canadian Construction Materials Centre, Institute for Research in Construction, National Research Council of Canada, Montreal Road, Ottawa, Ontario, K1A 0R6; Telephone (613) 993-6189, Fax (613) 952-0268.

For additional information contact:

Ron Waters, P.Eng.
(613) 993-6602

*Issued by the Institute for Research in Construction
under the authority of the National Research Council*

John Flack, Ph.D.
Manager, CCMC