



Evaluation Report

CCMC 12788-R

MASTERFORMAT	33 46 23.01
Issued	1997-01-09
Re-evaluated	2009-02-03
Revised	2009-04-22
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Re-evaluation in progress	

Delta-MS

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Delta-MS,” when used as foundation wall drainage material in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the Ontario Building Code (OBC) 2006:

- Clause 1.2.1.1.(1)(a), Division A, as an acceptable solution from Division B:
 - Clause 9.14.2.1.(2)(b)

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

Ruling No. 98-02-52 (12788-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 98-02-17 pursuant to s.29 of the *Building Code Act, 1992* (see Ruling for terms and conditions). This Ruling is subject to periodic review and revisions.

2. Description

“Delta-MS” is a high-density polyethylene, quasi-rigid, plastic sheet membrane, extruded in a manner that results in a dimpled surface on one side and a smooth surface on the other. The “Delta-MS” sheets have 8-mm-deep dimples, and are available in rolls that are 0.6 mm thick and 20 m long, in widths varying from 1.07 m to 3.0 m. The dimpled surface is installed facing the foundation wall to provide a capillary breaking layer, which protects against transient or intermittent water.

A typical installation is shown in Figure 1.

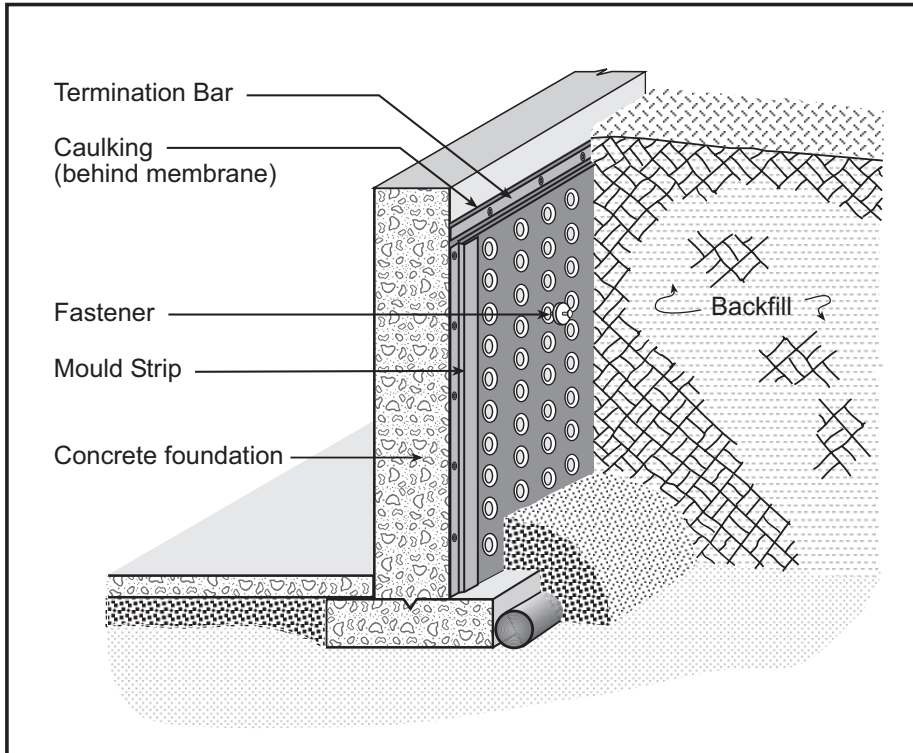


Figure 1. "Delta-MS" (view 1)

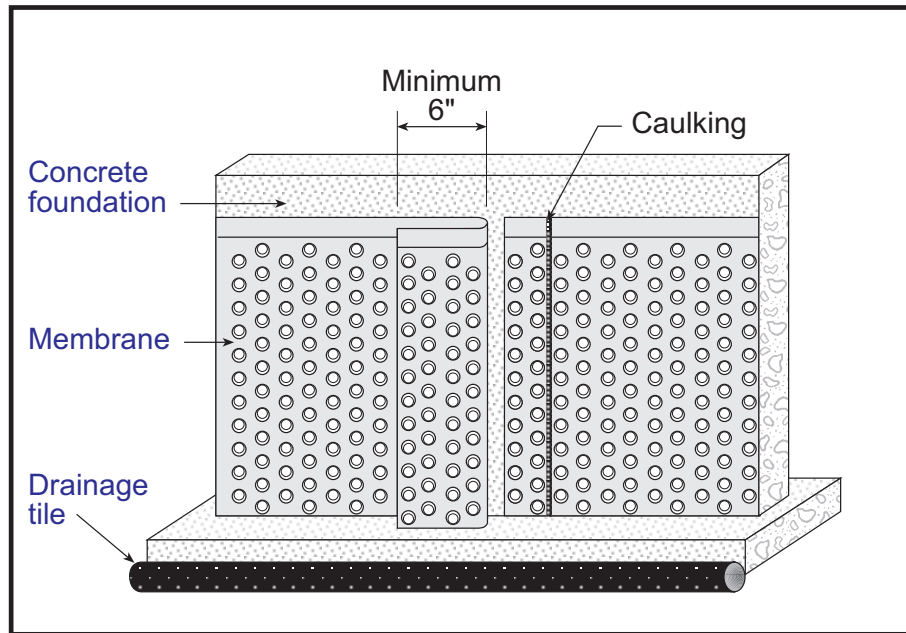


Figure 2. "Delta-MS" (view 2)

3. Conditions and Limitations

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

- "Delta-MS" is a Class B, Group 2, Type 2 dimpled membrane drainage product designed to act as a capillary breaking layer against the foundation wall to protect the wall against transient or intermittent water that may come in contact with the wall surface.
- As a Type 2 drainage product, "Delta-MS" has been evaluated for use at depths up to 3.7 m below grade.
- "Delta-MS" is suitable for use in pervious and semi-pervious soils; it is not suitable for use in practically impervious soils.
- "Delta-MS" also provides a level of dampproofing performance equivalent to that required in the National Building Code of Canada (NBC) 2005 (CCMC # 12658-R).
- The installation of "Delta-MS" must follow the manufacturer's assembly and installation procedures.
- "Delta-MS" is only one part of the total foundation drainage system, which consists of a combination of design and construction processes that use different products. A well-functioning weeping tile or pipe system to direct water away from the foundation wall is required.
- The placement and grading of backfill must conform to the requirements of Subsection 9.12.3. of the OBC 2006. It is recommended that an impervious "topping off" layer of clay silt material be placed on top of the backfill with a positive slope so that surface water drains away from the building.
- "Delta-MS" must be protected from exposure to ultra-violet radiation (sunlight) within a maximum of 30 days of its installation.

4. Technical Evidence

CCMC's Technical Guide for "Foundation Wall Drainage Systems – Dimpled Membranes," Masterformat number 02622, dated 23-12-2004, 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 OBC 2006. The Report holder has submitted test results for CCMC's evaluation. Testing was conducted at an independent laboratory recognized by CCMC. The corresponding test results for "Delta-MS" are summarized below.

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

Table 4.1 Test Results for “Delta-MS”

Property	Requirements	Results
Thickness (mm)	min. 0.6 in flat area min 0.5 in dimple area	0.7 0.5
Weight (g/m ²)	min. 500	590
Impact load	min. 12 of 15 (shall pass a rating of 3)	15 of 15
Static puncturing	min. 5 of 6 (shall pass a rating of 3)	6 of 6
Cold bending	no visible cracking	no visible cracking
Original - Tensile strength (kN/m width)	min. 8	MD 14.66, XD 12.2
- Elongation (%)	min. 25	MD 928, XD 194
Water immersion - Tensile strength (%)	80% of original	MD 107.5, XD 104.1
- Elongation (%)	70% of original	MD 97.3, XD 71.6
Heat aging - Dimensional change (%)	± 1	MD 1.2, ⁽¹⁾ XD 0.8
- Weight change (%)	0.10	0.0
- Tensile strength (%)	80% of original	MD 112.3, XD 112.3
- Elongation (%)	70% of original	MD 86.5, XD 74.2
Chemical attack exposure Ammonium chloride - Tensile strength (%)	80% of original	MD 102.7, XD 95.9
- Elongation (%)	70% of original	MD 89.9, XD 87.1
Sodium sulfate - Tensile strength (%)	80% of original	MD 105.5, XD 100.8
- Elongation (%)	70% of original	MD 99.7, XD 118
Compressive strength (kN/m ²) ⁽²⁾	100	132
Side water flow (mL/15 min) 1.0 gradient at 30 kPa	Min. 500 mL/15 minutes	Pass

(1) Deemed acceptable based on an acceptable compressive strength test after heat aging.

(2) The compressive load test was done on the dimpled surface.

Report Holder Cosella Dörken Products Inc.

4655 Delta Way
Beamsville, Ontario
L0R 1B4

Tel.: (905) 563-3255
Fax: (905) 563-5582

Plant: Beamsville, Ontario

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