



Evaluation Report CCMC 13182-R DMX AG

1. Opinion

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

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Clause 9.14.2.1.(2)(b), Foundation Wall Drainage

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

Ruling No. 09-20-218 (13182-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 2009-08-14 (revised on 2011-09-13) 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 black dimpled high-density polyethylene membrane with a flat tab on one end. The membrane is wrapped around the foundation wall with the raised dimples placed against the wall and the flat tab at the top.

The product is available in rolled sheets that are 0.6 mm thick, 20 m long, and in a variety of widths up to 2.4 m. When two sheets are joined side-by-side they must be overlapped by 200 to 300 mm with their dimples meshing and when two sheets are joined top-to-bottom they must be overlapped by 150 mm.

To ensure correct application, the product drainage system includes a range of accessories such as special trim strip, plugs and nails.

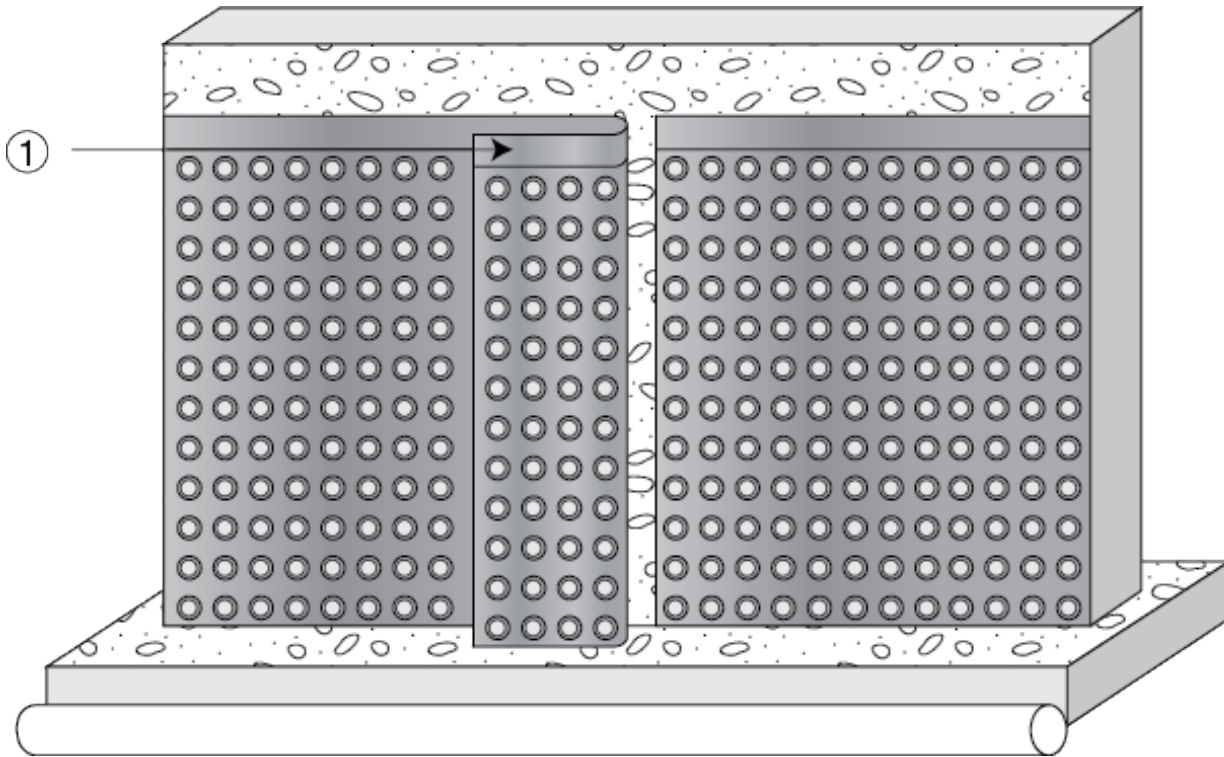


Figure 1. Membranes joined vertically:

1. Overlap the membrane 200 to 300 mm. Insert plugs and nails every 200 mm along the overlap.

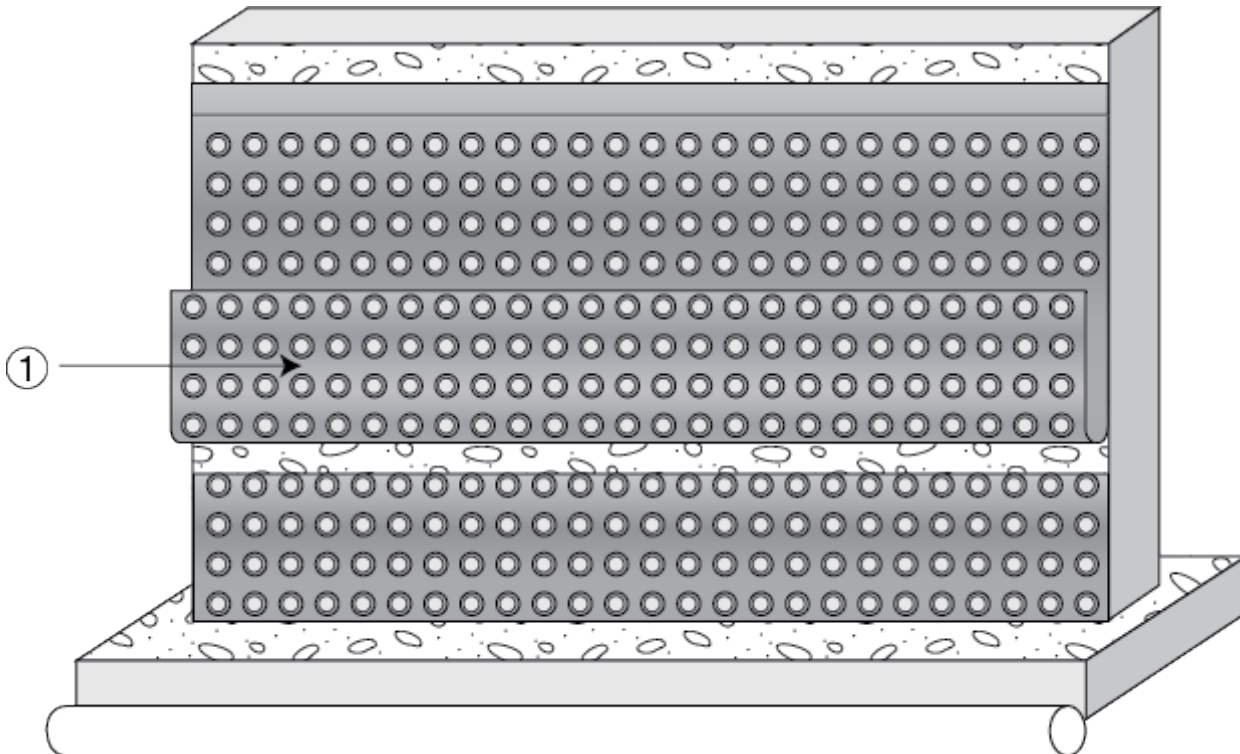


Figure 2. Membranes joined horizontally:

1. Overlap the membrane 150 mm. Insert plugs and nails every 200 mm along the overlap.

3. Conditions and Limitations

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

- The product 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's surface.
- As a Type 2 drainage product, the product has been evaluated for use in depths up to 3.7 m below grade.
- The product is suitable for use in pervious and semi-pervious soil conditions that allow for some drainage through the soil. These soils are made up of very fine sand, organic and inorganic silts, mixtures of sand, silt and clay, glacial till, and stratified clay deposits that have a soil grain size defined by $D_{10} \geq 0.002$ mm, where D_{10} is the sieve size that permits 10% of the soil by weight to pass through it in a sieve analysis test.
- The product must not be used in practically impervious soil conditions (i.e. homogeneous clays below zone of weathering) where the soil grain size is $D_{10} \leq 0.002$ mm.
- “DMX AG” is only one portion 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 drainage system in accordance with the OBC 2006, Subsections 9.14.3., 9.14.4., and 9.14.5. is required to direct water away from the foundation wall.
- The placement and grading of backfill must conform to the requirements of Subsection 9.12.3., Backfill, 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.
- When used over concrete and concrete block foundation walls, the wall must be covered with the product from the top of the footing to the final grade. The top of the membrane must be securely fastened to the foundation surface and caulked or finished with appropriate flashing, which is available from the manufacturer. Please note that the other wall substrates are considered beyond the scope of this evaluation.
- The product must be protected from exposure to ultraviolet radiation (sunlight) within a maximum of 30 days of its installation.
- The product has also been evaluated for its dampproofing characteristics. See CCMC 13169-R for details.
- The product's packaging must be clearly identified with the following:
 - manufacturer's name or logo and
 - the phrase “CCMC 13182-R”
- The product must be installed in accordance with the manufacturer's current installation instructions.

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 General

Table 4.1.1 Test results for the product

Properties		Requirements	Results
Thickness (mm)		Min. 0.6 in flat area	0.9
		Min 0.5 in dimpled area	1.1
Weight (g/m^2)		Min. 500	878
Impact load		Min. 12 of 15 shall pass a rating of 3	30 of 30
Static puncturing (rating of 3)		Min. 5 of 6 shall pass a rating of 3	12 of 12
Cold bending		No visible cracking	No visible cracking
Water vapour permeability ($\text{g}/\text{m}^2/\text{d}$)		Max. 4	Pass
Original	Tensile strength (kN/m width)	Min. 10	MD 21.2 ¹
	Elongation (%)	Min. 25	MD 102.4 ¹
Water immersion	Tensile strength (%)	80% of original	MD 123 ¹
	Elongation (%)	70% of original	MD 149 ¹

Table 4.1.1 Test results for the product (cont.)

Properties		Requirements	Results
Heat aging	Dimensional change(%)	± 1	Width -0.2
			Length -1.3 ²
	Weight change (%)	0.10	-0.3
	Tensile strength (%)	80% of original	MD 99 ¹
	Elongation (%)	70% of original	MD 74 ¹
Chemical attack exposure	Ammonium chloride	80% of original	MD 95 ¹
			MD 111 ¹
	Sodium sulfate	80% of original	MD 97 ¹
			MD 120 ¹
Compressive strength (kN/m ²) ³		Min. 100	419
Side water flow (mL/15 min) 1.0 gradient at 30 kPa		500	Pass

Notes to table 4.1.1

- ¹ MD refers to the “machine direction” of the long dimension of the polymer sheet.
- ² Deemed acceptable based on an acceptable compressive strength test after heat aging.
- ³ The compressive load test was done on the dimpled surface.

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