



Evaluation Report CCMC 13568-R DMX Drain 5M (Drainage)

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “DMX Drain 5M (Drainage)”, 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.

2. Description

The product consists of a dimpled, high-density polyethylene membrane (DMX AG CCMC #13182-R) laminated to a geotextile filter fabric. The membrane is installed on the foundation wall with the raised dimples facing away from the wall.

The product is available in rolled sheets that are 0.6 mm thick, 20 m long and up to 2.4 m wide. When two sheets are joined side-by side, they must be overlapped by 150 to 300 mm with their dimples meshing; when two sheets are joined top-to-bottom (horizontally), they must be overlapped by 150 mm (minimum).

A range of accessories, such as special trim strips, plugs and nails, is available to ensure correct application of the product.

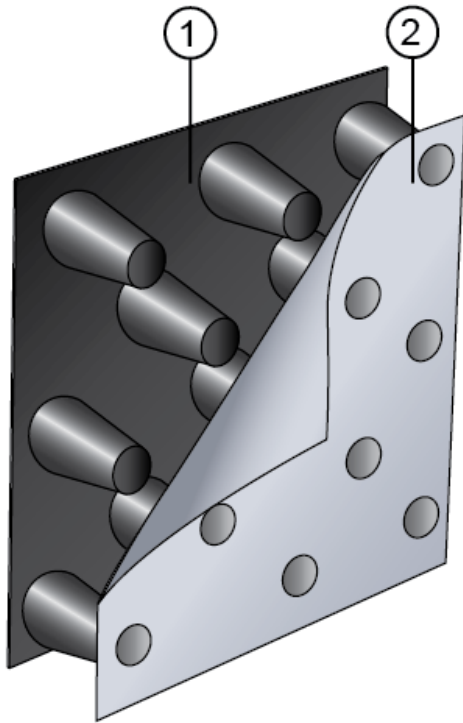


Figure 1. “DMX Drain 5M (Dampproofing)” products:

1. dimpled high-density polyethylene sheet
2. geotextile filter fabric

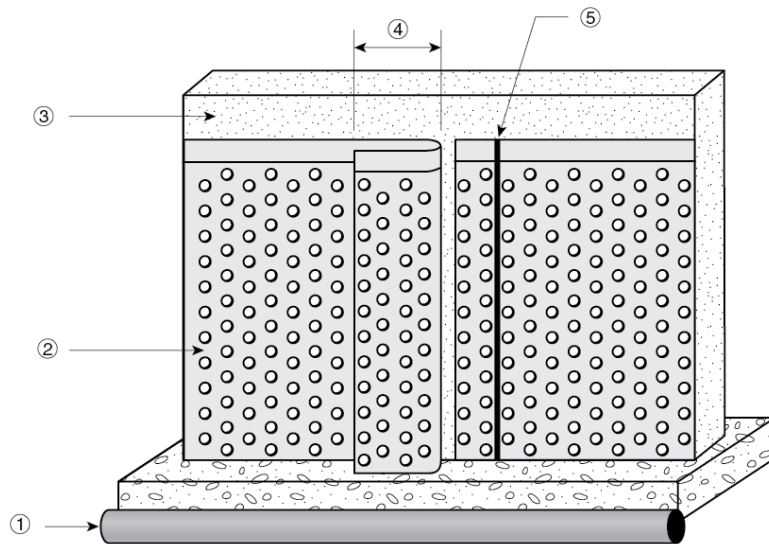


Figure 2. Installation of “DMX Drain 5M (Dampproofing)”:

1. drainage tile
2. membrane
3. concrete foundation
4. minimum 150 mm overlap (refer to manufacturer's installation guide for details)
5. caulking and fasteners at top edge and all laps

Note: filter fabric is not shown in above drawing for clarity purposes.

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the "DMX Drain 5M (Drainage)" being used in accordance with the conditions and limitations set out below.

- The product has been evaluated for use against cast-in-place and concrete block foundations only.
- The product is only one component of the total foundation drainage system, which must be installed in accordance with Article 9.14.2.1. of the OBC 2006.
- The product can only be installed with the dimples facing away from the wall and must be protected from exposure to ultraviolet radiation from the sun within 30 days of its installation.
- The product is evaluated for use in depths up to 3.7 m below grade. Application depths greater than 3.7 m are considered to be outside the scope of this Report.
- The product is suitable for use in pervious and semi-pervious soil conditions that allow for some drainage through the soil. Such soils include 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 $D_{10} > 0.002$ mm, where D_{10} is the sieve size that permits 10% by weight of the soil to pass through it in a sieve analysis test.
- The product is not to be used in practically impervious soil conditions (e.g. homogeneous clays below zone of weathering) where the soil grain size is $D_{10} < 0.002$ mm.
- The product must cover the foundation wall from the top of the footing to the final grade.
- The top of the membrane must be mechanically fastened and sealed.
- All vertical joints and terminations must be mechanically fastened and sealed.
- As the drainage membrane does not have to adhere to the surface and can permanently bridge any normal joint, tie hole, fault or shrinkage crack, the wall surface does not have to be parged, cleaned, patched or sealed before hanging the membrane.
- The product has also been evaluated for use as a foundation wall dampproofing material. For details, see CCMC # 13571-R.
- The product label and/or packaging must be clearly identified with the following:
 - manufacturer's name or logo, and
 - the phrase "CCMC 13568-R".

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 Polyethylene Membrane

Properties		Requirements	Results
Compressive strength (kN/m ²) ¹		100	419
Impact load		Min. 12 of 15 shall pass a rating of 3	30 of 30
Static puncturing		Min. 5 of 6 shall pass a rating of 3	12 of 12
Cold bending		No visible cracking	No visible cracking
Tensile strength	At yield (kN/m)	Min. 8	MD 13.7 ²
	Elongation at break (%)	Min. 25	MD 52 ²
Tensile strength after water immersion	At yield (%)	Min. 80% of original	MD 123 ²
	Elongation at break (%)	Min. 70% of original	MD 149 ²

Table 4.1.1 Test Results for the Polyethylene Membrane (cont.)

Properties		Requirements	Results
Heat aging	Dimensional change (%)	± 1	Width -0.2
			Length -1.3 ³
	Weight change (%)	Max. 0.10	-0.3
	Tensile strength (%)	Min. 80% of original	MD 99 ²
	Elongation (%)	Min. 70% of original	MD 74 ²
Chemical attack exposure	Ammonium chloride	Min. 80% of original	MD 95 ²
			Elongation (%)
	Sodium sulfate	Min. 80% of original	MD 97 ²
			Elongation (%)

Notes to Table 4.1.1:

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

Table 4.1.2 Test Results for the Geotextile Filter Fabric

Properties	Requirements	Results
Grab tensile (N)	485	644
Elongation (%)	20	62.6
Puncture resistance (N)	180	251
Apparent opening size (mm)	0.3	0.3
Water permittivity (s ⁻¹)	0.4	1.2
Tearing strength (N)	220	333
Side waterflow (mL/15 min) 1.0 gradient at 30 kPa	500	Pass

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