



Evaluation Report CCMC 13182-R DMX AG

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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 (OBC) 2012:

- 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 the CCMC evaluation of the technical evidence in Section 4 provided by the Report Holder.

2. Description

The product is a high-density polyethylene (HDPE), semi-rigid, thermally formed sheet that is smooth on one side and “dimpled” on the other side to provide an air gap between the membrane and the wall surface. The sheet thickness is 0.6 mm. The product is available in rolled sheets 2.4 m (8 ft.) wide. When two sheets are joined side by side they must be overlapped by 200 mm to 300 mm with the dimples meshing. When two sheets are joined top-to-bottom they must be overlapped by 150 mm.

To ensure correct application, a range of accessories, such as fasteners, washers and moulding strips, are included with the product. Photos of the product are below (Figure 1 and 2).

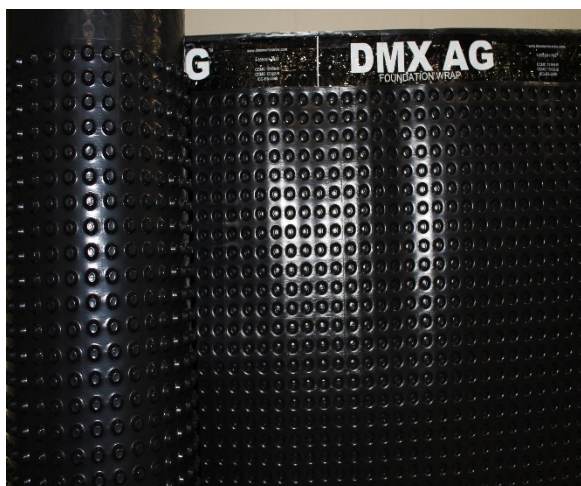


Figure 1. Illustration of the product

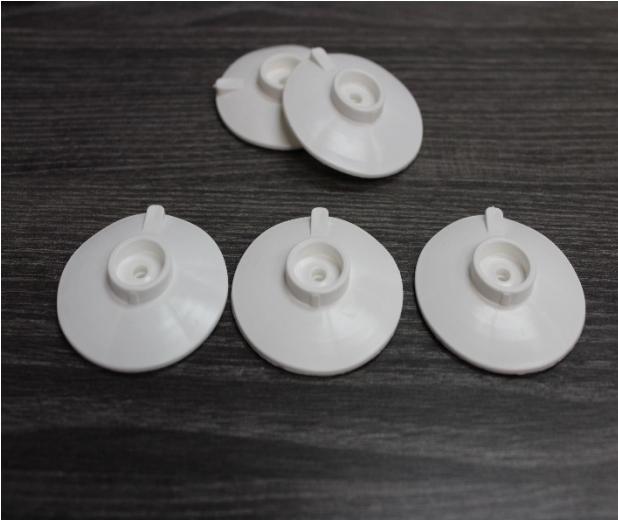


Figure 2. Illustration of the washer

3. Conditions and Limitations

The CCMC compliance opinion in Section 1 is bound by the “DMX AG” being used in accordance with the conditions and limitations set out below:

- Based on the evidence provided, the product has been classified as Type 2, Class B.
- The product must be installed in accordance with the manufacturer’s instructions.
- The product was evaluated for use against cast-in-place and concrete block foundation only.
- The product is a dimpled membrane designed to act as a protective or capillary breaking layer against a foundation wall to protect it from transient or intermittent water that may come in contact with the surface of the wall.
- The product has been evaluated for use in vertical applications in depths of 3.7 m below grade. Applications greater than 3.7 m are considered to be outside the scope of this Evaluation.
- The product is only one portion of the total foundation drainage system, which consists of a combination of design and construction processes that use different products. In particular, the product must be bent at the footing that is at the bottom of the wall to guide water past the cold joint to a drainage pipe located beyond the footing. This pipe will drain the water collected by the product toward an outflow (i.e., sewer). The product relies on a foundation wall drainage system that conforms to Subsection 9.14.3., Drainage Tile and Pipe, or to Subsection 9.14.4., Granular Drainage Layer, of Division B of the OBC 2012.
- The placement and grading of backfill must conform to the requirements of Subsection 9.12.3., Backfill, of Division B of the OBC 2012. It is recommended that an impervious “topping off” layer of clay or silt material be placed on top of the backfill to create a positive slope that would lead surface water away from the building.
- The product must be protected from exposure to ultraviolet (UV) sunlight within a maximum of 30 days of its installation.
- The long-term performance of a drainage system will depend on local conditions such as the soil type, hydrogeology of the site, mineralogy and presence of microorganisms in the soil (i.e., iron ochre), as well as compatibility of the filter with the soil, among other issues. There should be a proper engineering design for the drainage system.
- Pattern and spacing of anchors must be designed to consider the site-specific issues such as the type of soil and how it will react to the product, as well as the backfilling methods used.
- The top of the membrane and all vertical joints and terminations must be mechanically fastened and sealed to prevent soil particles from entering behind the membrane.
- The product must be labelled with the manufacturer’s name or logo and the phrase “CCMC 13182-R.”

4. Technical Evidence

The Report Holder has submitted technical documentation for the CCMC evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Performance Requirements

Table 4.1.1 Results of Testing the Performance Requirements of the Product

| Property | | Unit | Requirement | Result |
|--|--|-----------|-------------------------------|-----------------------------|
| Compressive strength (initial) | | kPa | 150 | 214.2 |
| Dynamic impact resistance (mean failure energy) | | J | ≥ 2.45 | 3.2 |
| Creep resistance (residual thickness at 25 years/10°C) | | % | ≥ 40% at 25 years/10°C | 60 |
| Cold bending at -30°C | | – | No visible crack | No visible crack |
| Tensile strength | at yield | kN/m | ≥ 8 | MD ¹ 8.7, XD 8.1 |
| | elongation at break | % | ≥ 25 | MD 28.8, XD 25.2 |
| Heat aging ⁽²⁾ | dimensional change | % | ≤ 1 | MD -0.9, XD -0.9 |
| | weight change | % | ≤ -0.1 | -0.2 ³ |
| | residual compression strength | % | ≥ 80 of initial | 103.9 |
| | creep resistance (residual thickness at 25 years/10°C) | % | ≥ 50% at 25 years/10°C | 78 |
| Resistance to alkaline environment | appearance | – | No visible crack | No visible crack |
| | residual compression strength | % | ≥ 80 of initial | 107.5 |
| | cold bending at -30°C | – | No cracks at room temperature | No visible crack |
| Anchorage performance | | kN/anchor | Report value | 0.77 |

Notes to Table 4.1.1:

- MD refers to the machine direction of the product; XD refers to cross direction of the product.
- Aging of the samples is limited to 2 weeks if OIT > 5 minutes after 2 weeks, and extended to 8 weeks otherwise.
- If the weight change is greater than 0.1%, an additional creep resistance test must be conducted and the residual thickness must be greater than 50% at 25 years/10°C.

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