



Evaluation Report CCMC 13673-R Hydrostar AG (Dampproofing)

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Hydrostar AG (Dampproofing)” dampproofing membranes, when used as a material for dampproofing in accordance with the conditions and limitations stated in Section 3 of this Report, comply with the National Building Code (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Article 9.13.2.2., Dampproofing Materials

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

Ruling No. [14-20-316 \(13673-R\)](#) 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 [2014-10-27](#) 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, high-density, polyethylene, quasi-rigid plastic sheet membrane extruded in a manner that results in a dimpled surface on one side and a flat surface on the other. The dimpled surface is intended to provide an air gap between the wall and the adjacent soil. The product is produced from a mixture of virgin and recycled plastic materials. The product has dimples that are 7 mm high and is available in rolls that are 0.635 mm thick (the flat, i.e., non-dimpled area), 20 m long, and either 2.4 m, 2.1 m, 1.98 m, 1.8 m, 1.5 m or 1.2 m wide.

To ensure correct application, a range of accessories, such as fasteners, washers, plugs, and moulding strips is included with the product.

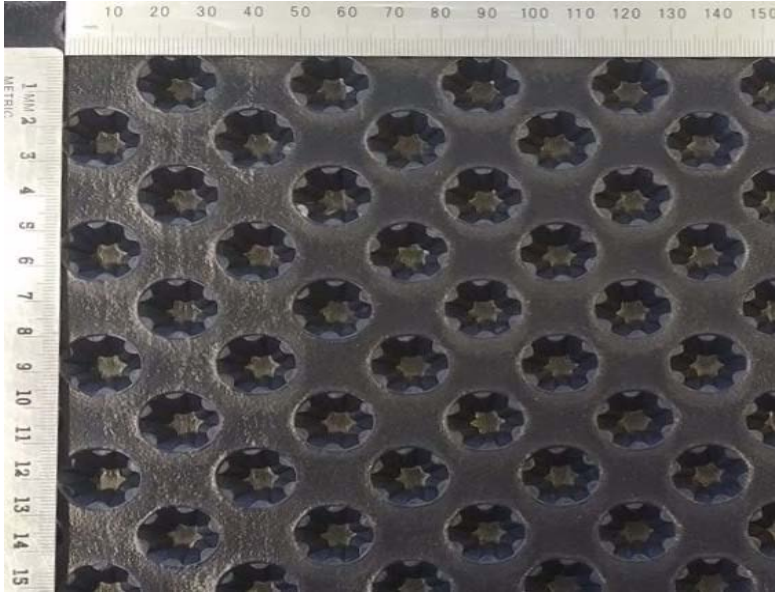


Figure 1. Side facing soil



Figure 2. Side facing wall



Figure 3. Anchor with washer

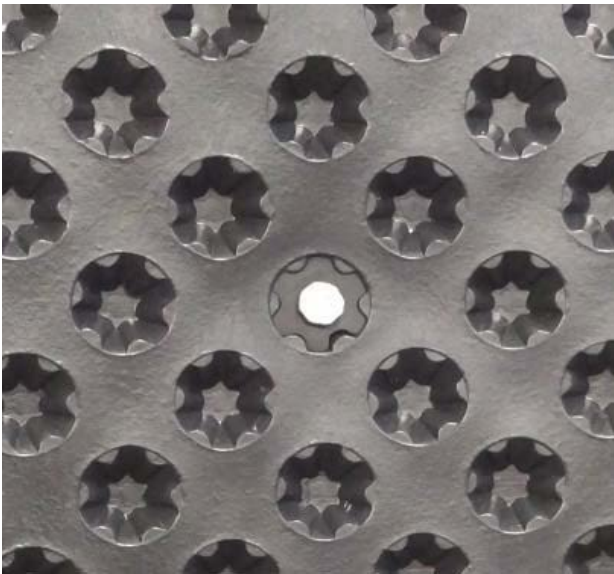


Figure 4. Anchor with plug

3. Conditions and Limitations

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

- Based on the evidence provided, the products have been classified as "Type 2" for use in vertical applications 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 evaluation
- The products must be installed in accordance with the manufacturer's instructions. In the event of conflict between the manufacturer's instructions and this Report, this Report shall govern.
- The products were evaluated for use against cast-in-place and concrete block foundations only and must cover the foundation wall from the top of the footing to the final grade.
- The products must be used in locations where the foundation wall is well-drained in accordance with Subsection 9.14.2., Foundation Drainage, of Division B of the NBC 2015.
- The products are dimpled membrane drainage systems designed to act as a protective layer or 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.
- The products must be protected from exposure to ultraviolet (UV) light (sunlight) within a maximum of 30 days of installation.
- Long-term performance of the dampproofing system depends 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 considerations. Compliance with this Report does not exempt the project from requiring proper engineering design of the drainage system.
- The performance of fixtures used to anchor the products in the wall was evaluated for a single anchor. It is the responsibility of the manufacturer to define the pattern and spacing of anchors, considering the anchor strength as well as site-specific issues such as the type of soil, how it will interact with the products, as well as the backfilling method 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. Accessories used to anchor the product are part of the evaluation.
- The product's label and/or packaging must be clearly identified with the following:
 - manufacturer's name or logo; and
 - the phrase "CCMC 13673-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 "Hydrostar AG"

Property	Unit	Requirement	Result	
Compressive strength (initial)	kPa	≥ 150	357.7	
Dynamic impact resistance (mean failure energy)	J	≥ 2.45	10.4	
Creep resistance (residual thickness at 25 years/10°C)	%	≥ 40% at 25 years/10°C	86.2	
Cold bending at -30°C	N/A	No visible crack	No visible crack	
Tensile strength	at yield	kN/m	≥ 8	XD 9.5 ⁽¹⁾
	elongation at break	%	≥ 25	XD 27.5
	anisotropy ratio	N/A	≥ 0.5	0.99
	OIT after 2 weeks	minutes	5	14.2 ⁽²⁾
	dimensional change	%	≤ 1	MD -0.6, XD -0.4
	weight change	%	≤ -0.1	-0.3
	residual compression strength	%	≥ 80 of initial	107
Heat aging (for 2 weeks)	OIT after 2 weeks	minutes	≥ 5	14.2 ⁽²⁾
	dimensional change	%	≤ 1	MD -0.6, XD -0.4
	weight change	%	≤ -0.1	-0.3
	residual compression strength	%	≥ 80 of initial	107
	creep resistance after heat aging (residual thickness at 25 years/10°C)	%	Class B: ≥ 40% 25 years/10°C	88.4
Resistance to alkaline environment	appearance	N/A	No visible crack	No visible crack
	residual compression strength	%	≥ 80 of initial	98.7
	bending resistance	N/A	No visible crack	No visible crack
Geometrical Properties				
Orientation of the dimples	-	Report value	Diagonal IMD/CD	
Number of dimples per unit area	dimples/m ²	Report value	1 554	
Overall thickness	mm	Report value	6.96	
Sheet thickness	mm	Report value	0.82	
Hollow core thickness	mm	Report value	6.14	
Anchorage performance anchorage efficiency	kN/washer	Report value	0.29	
	kN/plug	Report value	0.31	

Notes to Table 4.1.1:

- (1) "MD" refers to the "machine direction" of the product. "XD" refers to the "cross direction" of the product.
- (2) For products exhibiting an oxidation induction time (OIT) greater than five minutes after exposure to heat for two weeks, the test duration is limited to two weeks in lieu of eight weeks.

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