CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC 13674-R

CCMC Canadian code compliance evaluation

CCMC number:	13674-R
Status:	Active
Issue date:	2013-10-07
Modified date:	2024-12-12
Evaluation holder:	**Alexwill Distribution Inc.** 237 Arvin ave. Stoney Greek ON L8E 5S6 Canada Website: www.hydrostarag.com Telephone: 905-547-9727 Email: support@hydrostarag.com
Product name:	Hydrostar AG (Drainage)
Compliance:	OBC 2024
Criteria:	CCMC-TG-334623.01-24, "CCMC Technical Guide for Foundation Wall Drainage Systems - Dimpled Membranes"

In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.
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Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as a foundation wall drainage material in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

Ontario Building Code 2024

Code provision	Solution type
9.14.2.1.(2)(a) Foundation Wall Drainage	Acceptable

Ruling No. 14-20-316 (13674-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 (revised 2021-12-13) 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.

The above opinion(s) is/are based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

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Product information

Product name

Hydrostar AG (Drainage)

Product 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 0.82 mm thick (the flat, 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, and moulding strips, is included with the product.

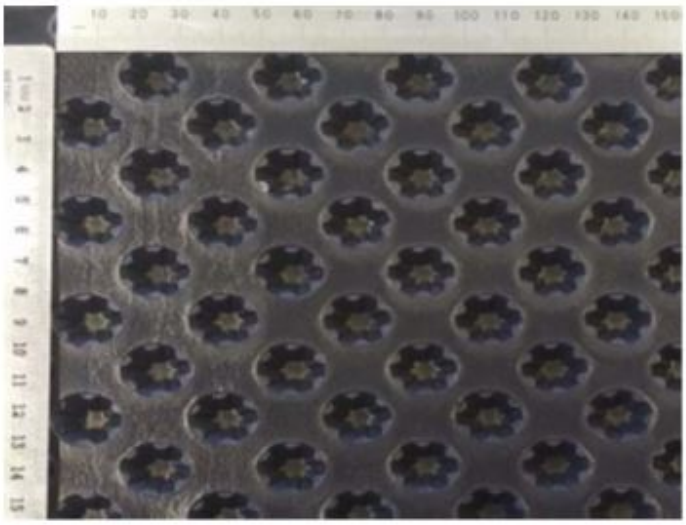

Figure 1. Side facing soil

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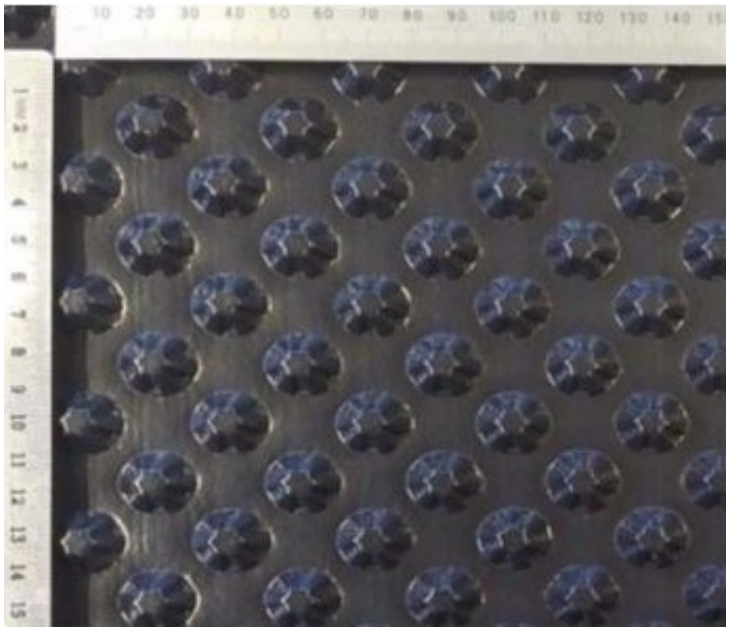

Figure 2. Side facing wall

Figure 3. Anchor with washer

Manufacturing plants

This evaluation is limited to products produced at the following plants:

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Product name	Manufacturing plants	
	Filago BG, Italy	Stoney Creek, ON, CA
Hydrostar AG (Drainage)	✓	✓

✓ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

Conditions and limitations

The CCMC's compliance opinion is bound by this product 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 (descriptions below).
- The product must be installed in accordance with the manufacturer's instructions.
- The product was evaluated for use against cast-in-place concrete and concrete block foundations only.
- The product is a dimpled membrane drainage product 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 surface of the wall.
- The product has been evaluated for use in vertical applications in depths of 3.7 m (Type 2) 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, it must be bent at the footing to guide water past the cold joint to a drainage pipe located outside of the footing at the bottom of the wall. 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 2017.
- The placement and grading of backfill must conform to the requirements of Subsection 9.12.3., Backfill, of Division B of the OBC 2017. It is recommended that an impervious "topping off" layer of clay or silt material be placed on top of the backfill with a positive slope leading 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.
- Class "B" products (cups facing the soil) must be backfilled before runoff water hits the geotextile (e.g., during heavy rainfall) to prevent clogging of the filter by fine particles of the soil carried by the running water.
- 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.
- The performance of fixtures used to anchor the product in the wall was evaluated for a single anchor. It is the manufacturer's responsibility 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 product and 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 must be labelled with the manufacturer's name or logo and the phrase "CCMC 13674-R."

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Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-334623.01-24	CCMC Technical Guide for Foundation Wall Drainage Systems - Dimpled Membranes

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

Table 1. Test results for Hydrostar AG (Drainage)

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 26
	anisotropy ratio	N/A	≥ 0.5	0.99
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 (3)
	residual compression strength	%	≥ 80 of initial	107
	creep resistance after heat aging (residual thickness at 25 years / 10°C)	%	≥ 40% @ 25 years / 10°C	88.4
Resistance to alkaline environment	**appearance**	N/A	No visible crack	No visible crack

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Property		Unit	Requirement	Result
	residual compression strength	%	≥ 80 of initial	94.9
	bending resistance	N/A	No visible crack	No visible crack
Hydraulic transmissivity (flow rate)		$m^3/h \cdot m$	≥ 1.33	127
Geometrical properties				
Orientation of the dimples		N/A	Report value	Diagonal MD/XD (1)
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		kN/washer	Report value	0.29
Anchorage efficiency		kN/plug	Report value	0.31

Notes

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.

3 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 40% at 25 years / 10°C.

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Disclaimer

The National Research Council of Canada (NRC) has evaluated only the characteristics of the specific product described herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (such as authorities having jurisdiction, design professionals and specifiers). This evaluation is valid when the product is used as part of permitted construction, respecting all conditions and limitations stated in the evaluation, and in accordance with applicable building codes and by-laws.

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Language

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First Nations National Building Officers Association (FNNBOA)	(First Nations National Building Officers Association (FNNBOA))
Canadian Home Builders' Association (CHBA)	(Canadian Home Builders' Association (CHBA))
Alberta Building Officials Association (ABOA)	(Alberta Building Officials Associations (ABOA))
Saskatchewan Building Officials Association (SBOA)	(Saskatchewan Building Officials Association (SBOA))
Manitoba Building Officials Association (MBOA)	(Manitoba Building Officials Association (MBOA))
Ontario Building Officials Association (OBOA)	(Ontario Building Officials Association (OBOA))
New Brunswick Building Officials Association (NBBOA)	(New Brunswick Building Officials Association (NBBOA))
Nova Scotia Building Officials Association (NSBOA)	(Nova Scotia Building Officials Association (NSBOA))

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For more information, contact the CCMC by phone at (613) 993-6189 or by email at ccmc@nrc-cnrc.gc.ca

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Code compliance as an acceptable solution

Code Compliance via Acceptable Solutions

> If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

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Code compliance as an alternative solution

Code Compliance via Alternative Solutions

> Where a design differs from the acceptable solutions in Division B, then it should be treated as an "**alternative solution**." A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

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