

CCMC 14053-R

CCMC Canadian code compliance evaluation

CCMC number:	14053-R
Status:	Active
Issue date:	2016-12-20
Modified date:	2023-11-08
Evaluation holder:	<p>Tema Technologies and Materials Srl Via Dell'Industria, 21 Vittorio Veneto (TV) I-31029 Italy Telephone: 00-39-04385031</p>
Product names:	<ul style="list-style-type: none"> • Isostud GEO T • Powerdrain Plus
Compliance:	OBC 2017
Criteria:	CCMC-TG-334623.01-17, "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 products, when used as a foundation wall drainage material in accordance with the conditions and limitations stated in this evaluation, comply with the following code:

Ontario Building Code 2017

Code provision	Solution type
9.14.2.1.(2)(b) Foundation Wall Drainage	<u>Acceptable</u>

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.

Product information

Product names

- Isostud GEO T
- Powerdrain Plus

Product 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 to provide an air gap between the membrane and the wall surface. The product also has an attached polypropylene geotextile mat on the dimpled side. The overall thickness is 8.66 mm with a sheet thickness of 0.025 mm and a hollow core thickness of 8.02 mm. The product is available in rolled sheets 2.44 m (8 ft.) wide by 15.24 m (50 ft.) long.

To ensure correct application, a range of accessories (such as anchors and moulding strips) is included with the product. Photos of the product and anchor accessory are below.



Figure 1. Side facing soil

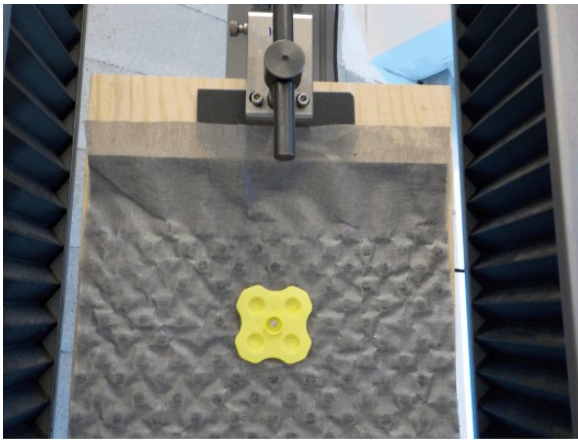


Figure 2. Anchor

Manufacturing plant

This evaluation is valid only for products produced at the following plant:

Product names	Manufacturing plant
	Kearneysville, WV, US
Isostud GEO T	☑
Powerdrain Plus	☑

☑ 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.

- The product has been classified as Type 2, Class A based on the evidence provided.
- 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 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 at 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, 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) radiation from sunlight within a maximum of 30 days of its installation.
- Class A products, with a geotextile facing the soil, must be backfilled before runoff water hits the geotextile (e.g., during a 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 micro-organisms 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, 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 must be labelled with the manufacturer's name or logo and the phrase "CCMC 14053-R."

Technical information

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

Criteria number	Criteria name
CCMC-TG-334623.01-17	CCMC Technical Guide for Foundation Wall Drainage Systems – Dimpled Membranes

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

Table 1. Results of testing the performance requirements of the product

Property	Unit	Requirement	Result
Compressive strength — initial	kPa	150	324.1
Dynamic impact resistance — mean failure energy	J	≥ 2.45	11.6
Creep resistance — residual thickness at 25 years/10°C	%	≥ 50% at 25 years/ 10°C	86.8
Cold bending at -30°C	N/A	No visible crack	No visible crack
Tensile strength — at yield	kN/m	≥ 8	MD ⁽¹⁾ 15.8, XD 15.8
Tensile strength — elongation at break	%	≥ 25	XD 45.2
Tensile strength — anisotropy ratio		≥ 0.5	1.01
Heat aging ⁽²⁾ for 2 weeks — dimensional change	%	≤ 1	MD -0.6, XD -0.6
Heat aging for 2 weeks — weight change	%	≤ -0.1	-0.7 ⁽²⁾
Heat aging for 2 weeks — residual compression strength	%	≥ 80 of initial	104
Heat aging — creep resistance (residual thickness at 25 years/10°C)	%	≥ 40% at 25 years/ 10°C	86
Resistance to alkaline environment — appearance	N/A	No visible crack	No visible crack
Resistance to alkaline environment — residual compression strength	%	≥ 80% of initial	107.0
Resistance to alkaline environment — bending at room temperature	N/A	No visible crack	No visible crack
Geotextile fabric properties — grab tensile	N	≥ 500	MD 522.5, XD 643.8
Geotextile fabric properties — puncture resistance	N	≥ 100	197.4
Geotextile fabric properties — trapezoid tear resistance	N	≥ 180	MD 204.9, XD 255.9

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Property	Unit	Requirement	Result
Geotextile fabric properties — filtration opening size by hydrodynamic sieving	µm	≤ 180; Report value	146
Geotextile fabric properties — permittivity	s ⁻¹	≥ 0.5; Report value	0.95
Geotextile fabric properties — UV resistance (retained strength)	% retained	> 50% after 500 hours	MD 83.0, XD 74.2
Hydraulic transmissivity — flow rate	m ³ /h·m	1.33	3.15
Anchorage performance — anchorage efficiency	kN/anchor	Report value	0.478
Geometrical properties			
Orientation of the dimples	–	Report value	Diagonal
Number of dimples per unit area	dimples/m ²	Report value	1 526
Overall thickness	mm	Report value	7.9
Sheet thickness	mm	Report value	0.77
Hollow core thickness	mm	Report value	7.13

Notes

- 1 MD refers to the machine direction of the product; XD refers to the cross direction of the product.
- 2 If the weight change is greater than 0.1%, an additional creep resistance test after heat aging must be conducted and the residual thickness must be greater than 40% at 25 years/10°C.

Administrative information

Use of Canadian Construction Materials Centre (CCMC) assessments

This assessment must be read in the context of the entire [CCMC Registry of Product Assessments](#), any applicable building code or by-law requirements, and/or any other regulatory requirements (for example, the [Canada Consumer Product Safety Act](#), the [Canadian Environmental Protection Act](#), etc.).

It is the responsibility of the user to confirm that the assessment they are using is current and has not been withdrawn or superseded by a later version on the [CCMC Registry of Product Assessments](#).

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

Une version française de ce document est disponible.

In the case of any discrepancy between the English and French version of this document, the English version shall prevail.

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CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)



(Alliance of Canadian Building Official Associations (ACBOA))

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))

The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. [Learn more about how the CCMC provides a unique service for Canada.](#)

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.

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.

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