

# CCMC 13634-R

## CCMC Canadian code compliance evaluation

<b>CCMC number:</b>	13634-R
<b>Status:</b>	Active
<b>Issue date:</b>	2014-03-26
<b>Modified date:</b>	2023-11-08
<b>Evaluation holder:</b>	<p><b>Tema Technologies and Materials Srl</b>  Via Dell'Industria, 21  Vittorio Veneto (TV) I-31029  Italy  Telephone: 00-39-04385031</p>
<b>Product names:</b>	<ul style="list-style-type: none"> <li>• Isostud</li> <li>• Marflex</li> <li>• Power Drain Isostud</li> </ul>
<b>Compliance:</b>	OBC 2017
<b>Criteria:</b>	CCMC-TG-334623.01-15, "CCMC Technical Guide for Foundation Wall Drainage Systems – Dimpled Membranes"

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

[Learn more about CCMC recognition](#) [Look for the trusted CCMC mark on products to verify compliance.](#)

## 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
- Marflex
- Power Drain Isostud

## Product description

The product is a high-density polyethylene (HDPE), semi-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 dimples are approximately 7.5 mm high and are intended to provide an air gap between the wall and the adjacent soil. The product is available in rolls that are approximately 0.78 mm thick, usually 20 m long and up to 4 m wide, as required.

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

The figures below illustrate the product and one of the accessories.

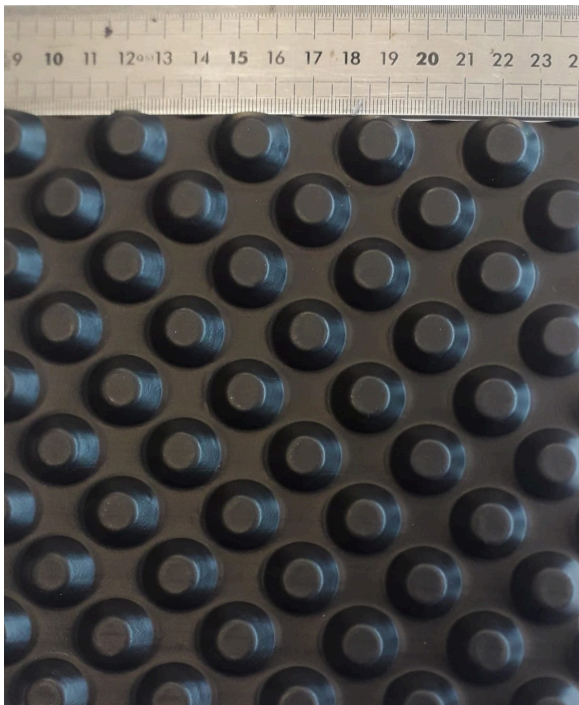


Figure 1. Side facing wall

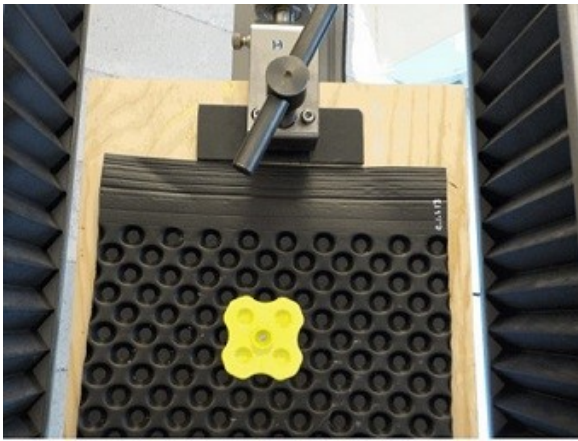


Figure 2. Anchor

## Manufacturing plant

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

Product names	Manufacturing plant
	Kearneysville, WV, US
Isostud	☑
Marflex	☑
Power Drain Isostud	☑

☑ 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 (applications up to depths of 3.7 m), Class B (cups facing soil).
- The product must be installed in accordance with the manufacturer's installation manual. In the event of conflict between the manufacturer's instructions and this evaluation, this evaluation shall govern.
- 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 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 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 six months of its installation.
- Long-term performance of the 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 (e.g., iron ochre), as well as compatibility of the filter with the soil, among other considerations. This evaluation does not free the project from requiring proper engineering design of 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 with trims, molding strips, termination bars or other accessories to prevent soil particles from entering behind the membrane. Overlaps or joints which are occasionally exposed to a head of water must be sealed to avoid water entry and associated dragging of soil particles between the membrane and the foundation wall. 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 13634-R."

# Technical information

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

Criteria number	Criteria name
CCMC-TG-334623.01-15	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 the product**

Property	Unit	Requirement	Result
Compressive strength (initial)	kPa	≥ 150	260
Dynamic impact resistance (mean failure energy)	J	≥ 2.45	11.6
Creep resistance (residual thickness at 25 years/10°C)	%	≥ 40% at 25 years/10°C	80.9
Cold bending at –30°C	N/A	No visible crack	No visible crack
Tensile strength at yield	kN/m	≥ 8	MD <sup>(1)</sup> 9.4, XD 8.5
Tensile strength – elongation at break	%	≥ 25	XD 55.8
Tensile strength – anisotropy ratio	–	≥ 0.5	1.11
Heat aging for 8 weeks – dimensional change	%	≤ 1	MD –0.8, XD –0.8
Heat aging for 8 weeks – weight change	%	≤ –0.1	–0.4 <sup>(2)</sup>
Heat aging for 8 weeks – residual compression strength	%	≥ 80% of initial	109.9
Heat aging for 8 weeks – creep resistance after heat aging (residual thickness at 25 years/10°C)	%	≥ 40% at 25 years/10°C	77.9
Resistance to alkaline environment – appearance	N/A	No visible crack	No visible crack
Resistance to alkaline environment – residual compression strength	%	≥ 80% of initial	105.6
Resistance to alkaline environment – appearance (cold bending at –30°C)	N/A	No cracks at room temperature	No visible crack
UV resistance – residual compression strength	%	≥ 80% of initial	105.8
UV resistance – oxidation induction time (OIT) after 500 hours of UV exposure	min.	5	4.5 <sup>(3)</sup>
<b>Geometrical properties</b>			
Orientation of dimples	–	Report value	Diagonal

This PDF is an alternative version. This document was published on 2024-02-29 and may not be the latest version of this evaluation. Users should consult the latest [published assessment](#) on the [CCMC Registry of Product Assessments](#), which contains the most up to date information. This PDF is intended for use as a record, not the latest information available.

Property	Unit	Requirement	Result
Number of dimples per unit area	Dimples/m <sup>2</sup>	Report value	1526
Overall thickness	mm	Report value	7.49
Sheet thickness	mm	Report value	0.78
Hollow core thickness	mm	≥ 5.0	6.72
Anchorage performance	kN/anchor	Report value	0.726

### Notes

- 1 MD refers to the machine direction of the product; XD refers to the cross machine direction of the product.
- 2 If the weight change is greater than 0.1%, an additional creep resistance test is conducted and the residual thickness must be greater than 40% at 25 years/10°C.
- 3 UV aging of the samples is extended to 1 500 hours if OIT ≤ 5 minutes

## 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))

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(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](mailto: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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