CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC 10475-R

CCMC Canadian code compliance evaluation

CCMC number:	10475-R
Status:	Active
Issue date:	1983-10-24
Modified date:	2024-04-15
Evaluation holder:	**Interlock Roofing LTD.** 9969 River Way Delta BC V4G 1M8 Canada Telephone: 604-953-1000 / 800-959-8089
Product names:	• Interlock®Cedar • Interlock®Slate
Compliance:	NBC 2015
Criteria:	CCMC-TG-074113-15B, "CCMC Technical Guide for Metal Roof Panels"

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 metal roofing system in accordance with the conditions and limitations stated in this evaluation, comply with the following code:

National Building Code of Canada 2015

Code provision	Solution type
9.26.1.2.(1) Roofs shall be protected with roofing, i ...	Acceptable
9.26.2. Roofing Materials	Alternative
9.26.13.1. Thickness	Acceptable

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

- Interlock®Cedar
- Interlock®Slate

Product description

Each product is a 265-mm × 460-mm shingle formed from 0.48-mm-thick pre-coated aluminum sheets coated with a polyvinylidene fluoride (PVDF) coating. The surface of the shingle is embossed with a wood shake or a slate pattern. The products are to be installed over solid sheathing with aluminum fasteners.

The products have an interlocking system on all four sides. The interlocking system along the sides of each shingle panel consists of a 16-mm flat lock seam. Along the top of each panel, there is a screw strip formed by folding the base material over the top of itself into a 35-mm clip. The bottom edge of the panel is formed into a hook that snaps into the screw strip of the panel below.

The system includes accessories such as ridge and hip caps, drip edges, valley flashing and starter flashing. A typical slate panel and cedar panel are shown in Figure 1 below.

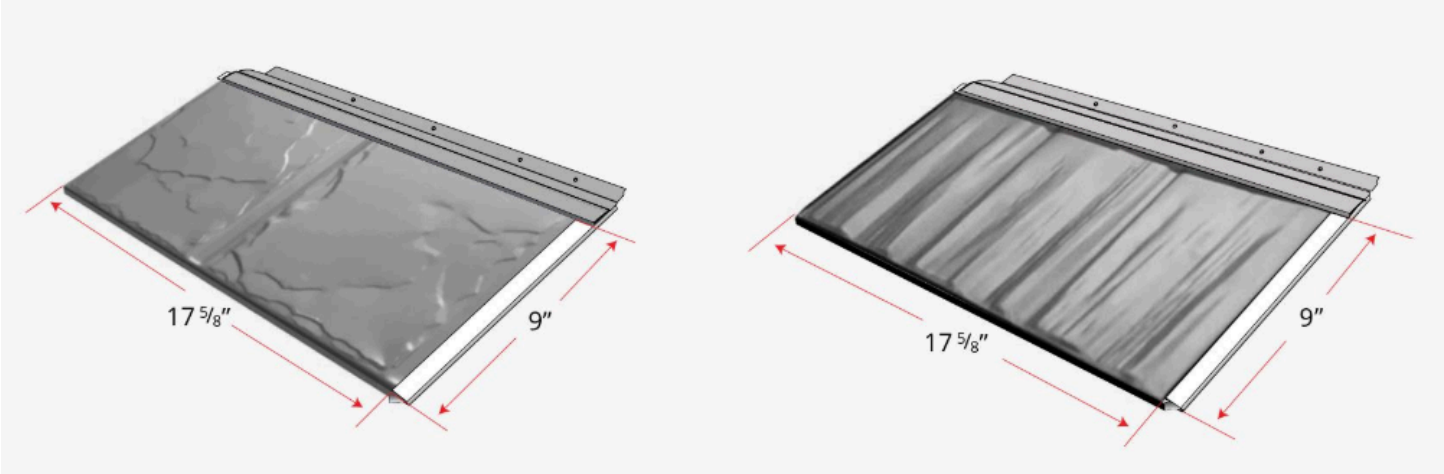

Figure 1. Interlock® Slate (left) and Interlock® Cedar (right) profiles

Manufacturing plant

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

Product names	Manufacturing plant
	Delta, BC, CA
Interlock®Cedar	✓
Interlock®Slate	✓

✓ 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 products must be installed on roofs having a minimum slope of 1 in 4.
- The products are limited to installations where no fire-resistance rating is required.
- The products are limited to installations where the specified wind pressure (factored) does not exceed those indicated in the wind uplift tables.
- The products must be installed over solid sheathing in compliance with the requirements of Subsection 9.23.16., Roof Sheathing, of Division B of the NBC 2015.
- An underlayment consisting of two layers of Type 15 organic felt or one layer of Type 30 organic felt must be used in conjunction with the shingles.
- Flashing must be installed in compliance with the requirements of Subsection 9.26.4., Flashing at Intersections, of Division B of the NBC 2015.
- The products must be installed with eave protection in compliance with the requirements of Subsection 9.26.5., Eave Protection for Shingles and Shakes, of Division B of the NBC 2015.
- Only aluminum nails may be used in conjunction with these products.
- The products are for use in locations where access is limited to maintenance or repair purposes.
- The products must be installed by authorized installers in strict conformance to the manufacturer's current instructions.
- The products or their packaging must be clearly identified with the phrase "CCMC 10475-R."

Technical information

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

Criteria number	Criteria name
CCMC-TG-074113-15B	CCMC Technical Guide for Metal Roof Panels

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 these products is summarized below.

Material requirements

Table 1. Basic material properties of Interlock® Slate/Cedar

Property	Requirement	Test method	Result
Thickness of base metal	≥ 0.48 mm	-	0.52
Coating quality	Smooth and uniform, free from cracks, pinholes, blisters and flaking	CAN/CGSB-93.1	Passed
Coating thickness (thickness of PVDF)	≥ 25 mm	ASTM B 487	25
Coating adhesion – dry adhesion	No removal of film	ASTM D 3359 (1)	Passed
Coating adhesion – wet adhesion	No removal of film	ASTM D 3359 (2)	Passed
Coating hardness	No rupture	ASTM D 3363	Passed
Coating flexibility	No flaking or cracking	ASTM D 522	Passed
Coating humidity resistance	No formation of blisters	CAN/CGSB-93.1	Passed
Accelerated weathering (coating durability)	No colour change; No flaking or cracking	ASTM G 155 (3)	Passed
Salt spray resistance	≥ 7 rating (4)	ASTM B 117 (5)	Passed
Impact resistance	No visible cracking	16-mm diameter impact tester (6)	Passed

Notes:

1 The specimens were conditioned at 23 ± 2°C and 50 ± 5% RH for 48 hours.

2 The specimens were conditioned in distilled water 38 ± 2°C for 24 hours.

3 The specimens were exposed to the Cycle 2 of Table X3.1 in ASTM G 155 for 2 000 hour of light exposure.

4 The rating was determined in accordance with AAMA 621, Section 7.9.2.2.

5	The specimens were exposed to the salt spray in accordance with ASTM B 117 for 1 000 hours.
6	The specimens were deformed by using a 16-mm diameter round nose impact tester, to the depth of a minimum of 3 mm ± 0.3 mm. The tape was firmly applied over the area and sharply pulled.

Performance requirements

Traffic Load

Table 2. Results of traffic load test results of Interlock® Slate/Cedar

Property	Requirement	Result
Traffic load	≥ 900 N	Pass

Wind uplift

Table 3. Wind uplift test results for Interlock® Slate/Cedar offset by half of a tile, three nails per shingle (1)

Pressure (kPa)	Requirement	Results
0.5	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.0	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.4	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
2.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
3.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.3	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
8.6	Ultimate load	Panels unclipped

	Note

1 The Interlock® Slate/Cedar shingles without underlayment were fastened onto a 1 220 mm × 2 440 mm test frame using three aluminum 38-mm 10d nails (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm Spruce-Pine-Fir (S-P-F) lumber spaced at 600 mm on centre (o.c.) using 50-mm 6d common nails.

Table 4. Wind uplift test results for Interlock® Slate/Cedar offset by half of a tile, one nail per shingle (1)

Pressure (kPa)	Requirement	Results
0.5	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.0	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.4	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
2.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
3.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.3	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.8	Ultimate load	Panels unclipped

Note

1 The Interlock® Slate/Cedar shingles with underlayment were fastened onto a 1 220 mm × 2 440 mm test frame using one aluminum 38-mm 10d nail (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm S-P-F lumber spaced at 600 mm o.c. using 50-mm 6d common nails.

Table 5. Wind uplift test results for Interlock® Slate/Cedar offset by 60 mm (2-⅜ in.), one nail per shingle (1)

Pressure (kPa)	Requirement	Results
0.5	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released

Pressure (kPa)	Requirement	Results
1.0	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.4	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
2.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
3.8	No evidence of deformation of permanent damage	Panels unclipped and kinked
4.3	No evidence of deformation of permanent damage	N/A
4.8	No evidence of deformation of permanent damage	N/A

Note

1 The Interlock® Slate/Cedar shingles with underlayment were fastened onto a 1 220 mm × 2 440 mm test frame using one aluminum 38-mm 10d nail (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm S-P-F lumber spaced at 600 mm o.c. using 50-mm 6d common nails.

Table 6. Wind uplift test results for Interlock® Slate/Cedar offset by 60 mm (2-⅜ in.), two nails per shingle (1)

Pressure (kPa)	Requirement	Results
0.5	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.0	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.4	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
2.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
3.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released

Pressure (kPa)	Requirement	Results
4.3	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
12.9	Ultimate load	Panels unclipped and could not hold any further load

Note

1 The Interlock® Slate/Cedar shingles with underlayment were fastened onto a 1 220 × 2 440 mm test frame using two aluminum 38-mm 10d nails (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm S-P-F lumber spaced at 600 mm o.c. using 50-mm 6d common nails.

Table 7. Wind uplift test results for Interlock® Slate/Cedar offset by 110 mm (4-⅜ in.), two nails per shingle (1)

Pressure (kPa)	Requirement	Results
0.5	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.0	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.4	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
1.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
2.9	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
3.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.3	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
4.8	No evidence of deformation of permanent damage	No damage for permanent deformation after pressure released
7.4	Ultimate load	Panels unclipped and could not hold any further load

Note

1 The Interlock® Slate/Cedar shingles with underlayment were fastened onto a 1 220 mm × 2 440 mm test frame using two aluminum 38-mm 10d nails (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm S-P-F lumber spaced at 600 mm o.c. using 50-mm 6d common nails.

Dynamic pressure water infiltration

Table 8. Dynamic pressure water infiltration test results for Interlock® Slate/Cedar

Wind speed (km/h) (1)	Duration (min)	Requirement	Results (2)
34–59	5	No leakage or damage	No sign of any water leakage or damage to roofing product
84–96	5	No leakage or damage	No sign of any water leakage or damage to roofing product
104–117	5	No leakage or damage	No sign of any water leakage or damage to roofing product
117–144	5	No leakage or damage	No sign of any water leakage or damage to roofing product
154–170	5	No leakage or damage	No sign of any water leakage or damage to roofing product

Notes:

1 The wind speed values presented in the table are unfactored. Local exposure conditions and building heights must be taken into account.

2 The Interlock® Slate/Cedar shingles with underlayment were fastened onto a 1 220 mm × 2 440 mm test frame using two aluminum 38-mm 10d nails (supplied by client) per shingle. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50-mm × 100-mm S-P-F lumber spaced at 600 mm o.c. using 50-mm 6d common nails.

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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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.

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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.

CCMC's code compliance opinions

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