CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC EVALUATION

CCMC 13473-R

CCMC Canadian code compliance evaluation

CCMC number:	13473-R
Status:	Active
Issue date:	2014-10-03
Modified date:	2024-03-19
Evaluation holder:	**Flexstone Coatings Inc.** 1230 West 75 Avenue Vancouver BC V6P 3G3 Canada Website: www.flexstones.ca Telephone: 604-222-8453
Product name:	FlexStone
Compliance:	NBC 2015, OBC
Criteria:	CCMC-TG-075610.02-15, "CCMC Technical Guide for Cold, Liquid-Applied Elastomeric Roofing Membrane (Exposed to Light Pedestrian Traffic)"

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 product, when used as a cold, liquid-applied polyurethane roofing membrane in accordance with the conditions and limitations stated in this evaluation, complies 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
Table 9.26.2.1.B Roofing Materials	Alternative

Ontario Building Code

Ruling No. 15-04-325 (13473-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 2015-09-29 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.

Product information

Product name

FlexStone

Product description

The product is a roofing membrane system consisting of three distinct layers of liquid-applied polyurethane coatings that, once cured, form a seamless, monolithic roofing membrane.

The base coat is Solvent Free Base - Polyurethane Base Membrane (water-catalyzed, aromatic urethane). The middle layer (COLORCOAT AR) is a single-component, aliphatic polyurethane. The acrylic flakes are broadcast while the middle layer is still wet. Then, the top layer, MULTI-GLAZE CLEAR COAT moisture cured urethane, i (Aliphatic Urethane Clear Sealer), is applied.

Manufacturing plant

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

Product name	Manufacturing plant
	Fontana, CA, US
FlexStone	⊘

⊘ 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 must be installed on a concrete or plywood substrate that provides positive drainage, where the minimum roof slope is 1 in 50 and the maximum is 1 in 25.
- When the product is used in buildings requiring a fire classification as per the NBC 2015, the product must be tested in accordance with the criteria in CAN/ULC-S107-10, "Methods of Fire Tests of Roof Coverings" in order to determine the product's fire classification.
- When the product is used in a roof assembly that requires a fire-resistance rating, the rating must be determined based on the results of tests conducted in conformance with CAN/ULC-S101-14, "Standard Methods of Fire Endurance Tests of Building Construction and Materials."
- The substrate must be free of debris, clean, and dry prior to installing the product.
- The product must be installed by manufacturer-approved installers.
- The product must be installed in accordance with the manufacturer's installation instructions.
- Usage of the product is limited to areas exposed to light, pedestrian traffic.
- The packaging for the product containers must be identified with the following information:
    - manufacturer's name or logo; and
    - the phrase "CCMC 13473-R."

Technical information

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

Criteria number	Criteria name
CCMC-TG-075610.02-15	CCMC Technical Guide for Cold, Liquid-Applied Elastomeric Roofing Membrane (Exposed to Light Pedestrian Traffic)

CCMC's Technical Guide for "Cold-Applied, Liquid, Elastomeric Roofing (Exposed to Light Pedestrian Traffic)" sets out the nature of the technical evidence required by the CCMC to enable it to evaluate a product as an acceptable or alternative solution in compliance with the NBC 2015. The Report Holder has submitted test results for CCMC's evaluation. Testing was conducted at an independent laboratory recognized by the CCMC. The corresponding test results for "FlexStone" are summarized below.

Physical requirements

Table 1. Results of testing of physical properties of "FlexStone"

Property	Material layer	Unit	Requirement	Result
Linear dimensional change in length	FlexStone	%	≤ ±1	−0.5
Linear dimensional change in width	FlexStone	%	≤ ±1	−0.4
Water absorption	Base coat with middle coat	%	≤ ±3	2
Tensile strength (tension)	Base coat	MPa	Report value	2.55
	FlexStone		≥ 1.86	2.92
Elongation	Base coat	%	Report value	364
	FlexStone		≥ 200	250
Water vapour permeance	FlexStone	ng/(Pa·s·m^2)	Report value	69.4
Flexibility – mandrel bend	Base coat	-	No cracking or flaking	Pass
Tear resistance	Base coat	kN/m	≥ 5.8	10.0
Abrasion resistance	FlexStone	mg	≤ 50	8
Indentation hardness	Base coat	Durometer units	Report value	58
	FlexStone		82 ± 5	69 (1)
Static puncture	Base coat	N	4 out of 5 samples ≥ 150 and must pass watertightness test	5 out of 5 at 23 ± 2°C
	Base coat			5 out of 5 at −15 ± 2°C

Property	Material layer	Unit	Requirement	Result
Dynamic impact (puncture)	Base coat	J	20 out of 24 samples ≥ 9 and must pass watertightness test	24 out of 24 at 23 ± 2°C
	Base coat			24 out of 24 at −15 ± 2°C
Peel adhesion	Base coat	N/m	≥ 875 concrete	1 043
	Base coat		≥ 525 plywood	1 303
Crack bridging as received	Base coat	-	No evidence of cracking, splitting, pinholes or loss of adhesion	Pass
Crack bridging after heat aging	Base coat	-	No evidence of cracking, splitting, pinholes or loss of adhesion	Pass

Notes:

1 Hardness property performance deemed acceptable as the product passes static puncture and dynamic impact, and the watertightness test after static puncture and dynamic impact tests.

Performance requirements

Table 2. Results of testing of performance properties of “FlexStone”

Property	Material Layer	Unit	Requirement	Result
Retention of tensile strength after H_2O solution	Base coat	% of original	≥ 70 average	90 (2.30 MPa)
Retention of tensile strength after NaCl solution	Base coat	% of original	≥ 70 average	85 (2.17 MPa)
Retention of tensile strength after heat aging	Base coat	% of original	Report value	90 (2.30 MPa)
Retention of tensile strength after heat aging	FlexStone	% of original	≥ 90 average	95 (2.77 MPa)
Retention of elongation after heat aging	Base coat	%	Report value	56 (204% of original)
Retention of elongation after heat aging	FlexStone	%	≥ 90 average	90 (225% of original)
Retention of tensile strength after accelerated weathering FL/UV – 5000 hours	Base coat	% of original	Report value	85 (2.17 MPa)
Retention of tensile strength after accelerated weathering FL/UV – 5000 hours	FlexStone	% of original	≥ 90 average	85 (2.48 MPa) (1)

Property	Material Layer	Unit	Requirement	Result
Retention of elongation after accelerated weathering FL/UV – 5000 hours	Base coat	%	Report value	47 (171% of original)
Retention of elongation after accelerated weathering FL/UV – 5000 hours	FlexStone	%	≥ 90 average	82 (205% of original) (2)
Glass transition before heat aging	Base coat	°C	Report value	−49.7
Glass transition after heat aging	Base coat	°C	Report value	−44.4
Change in glass transition (ΔTg) from before and after heat aging	Base coat	°C	≤ ± 8	5.3
Glass transition before accelerated weathering FL/UV – 5000 hours	Base coat	°C	Report value	−49.7
Glass transition after accelerated weathering FL/UV – 5000 hours	Base coat	°C	Report value	−46.3
Change in glass transition (ΔTg) from before and after accelerated weathering FL/UV – 5000	Base coat	°C	≤ ± 8	3.4
Watertightness after static puncture	Base coat	-	No leakage	Pass at 23 ± 2°C
	Base coat		No leakage	Pass at −15 ± 2°C
Watertightness after dynamic impact (puncture)	Base coat	-	No leakage	Pass at 23 ± 2°C
	Base coat		No leakage	Pass at −15 ± 2°C

Notes:

1 Property performance deemed acceptable as the tensile strength is maintained at a level above the minimum tensile strength requirement.

2 Property performance deemed acceptable as the elongation is maintained at a level above the minimum elongation requirement.

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.

This evaluation is provided without representation, warranty or guarantee of any kind, expressed or implied, and the NRC provides no endorsement for any evaluated product. The NRC accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained herein or the use of any evaluated product. The NRC is not undertaking to render professional or other services on behalf of any person or entity nor to perform any duty owed by any person or entity to another person or entity.

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.

Copyright

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

NOTICE

The information presented on this webpage (in HTML format) is the most up-to-date information available from the CCMC about this assessment.

By downloading this PDF you acknowledge that:

- this PDF is intended for record-keeping purposes only,
- it represents the information as it was available at the time of downloading, and
- it may not reflect the latest available information at some future date.

References to this CCMC assessment (in product literature, on websites, etc.) must be made by linking to the evaluation webpage. **This PDF must not be used as a means of distributing this assessment to an audience.**

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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

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:

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