CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC EVALUATION

# CCMC 14150-R

## CCMC Canadian code compliance evaluation

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| **CCMC number:** | 14150-R |
| **Status:** | Active |
| **Issue date:** | 2020-01-08 |
| **Modified date:** | 2025-07-24 |
| **Evaluation holder:** | **Trunorth Composites Inc.**<br>55 Plant Farm Boulevard<br>Brantford ON N3S 7W2<br>Canada<br>Website: trunorthdecking.com/<br>Telephone: 905-265-0022 extension 227<br>Email: contactus@trunorthdeck.com |
| **Product name:** | Clubhouse® Deck |
| **Compliance:** | NBC 2015, NBC 2020 |
| **Criteria:** | CCMC-TG-067315.06-15, "CCMC Technical Guide for Exterior Decking Planks Made of Solid Core PVC Foam Capped with Acrylic Cap Layer"<br>CCMC-TG-067315.06-20, "CCMC Technical Guide for Exterior Decking Planks Made of Solid Core PVC Foam Capped with Acrylic Cap Layer" |

**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 exterior decking in accordance with the conditions and limitations stated in this evaluation, complies with the following codes:

### National Building Code of Canada 2015

| Code provision | Solution type |
|---|---|
| 9.3.2.9. Termite and Decay Protection | Alternative |
| 9.4.2.3. Platforms Subject to Snow and Occupancy Loads | Alternative |
| 9.4.3.1. Deflections | Alternative |
| 9.8.9.1. Loads on Stairs and Ramps | Alternative |
| 9.23.15.5. Subfloor Thickness or Rating | Alternative |

### National Building Code of Canada 2020

| Code provision | Solution type |
|---|---|
| 9.3.2.9. Termite and Decay Protection | Alternative |
| 9.4.2.3. Platforms Subject to Snow and Occupancy Loads | Alternative |
| 9.4.3.1. Deflections | Alternative |
| 9.8.9.1. Loads on Stairs and Ramps | Alternative |
| 9.23.15.5. Subfloor Thickness or Rating | Alternative |

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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

Clubhouse® Deck

## Product description

The products are exterior decking planks made of solid-core foamed polyvinyl chloride (PVC) extrusions with an acrylic cap layer. The products are solid- and grooved-edge profile decking boards with nominal dimensions of 139.7 mm wide × 25.4 mm thick. The surface of the products are embossed with a simulated wood-grain pattern and are produced in four different combinations of dual colours (i.e., the top and bottom of the same plank are different colours).

The products are intended to be used as exterior decking to be installed over traditional structural wood framing spaced at 400 mm on centre (o.c.), and stair treads installed on stringers spaced at 230 mm o.c.

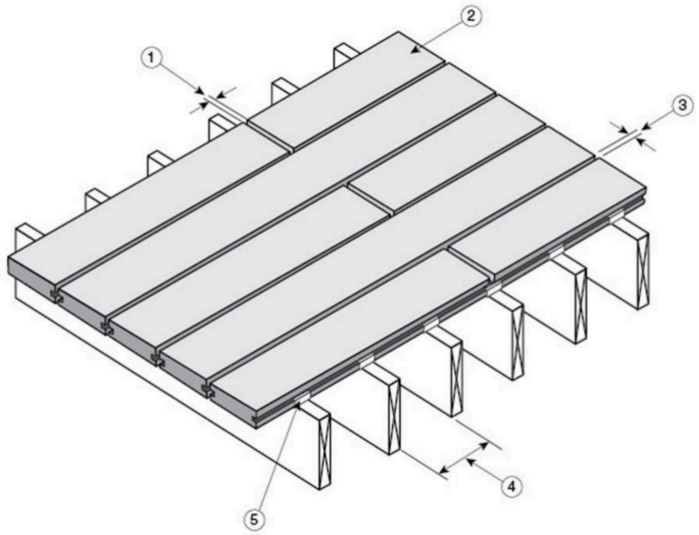


Figure 1. Installation details for the grooved-edge Clubhouse® Deck products with hidden fasteners

1. 3 mm minimum end-to-end gapping for installation above 0°C and below 21°C
2. Clubhouse® Deck grooved-edge board
3. 3 mm minimum width-to-width gapping
4. maximum joist spacing of 400 mm o.c.
5. hidden fastener or clip system (EB TY® or TigerClaw®)

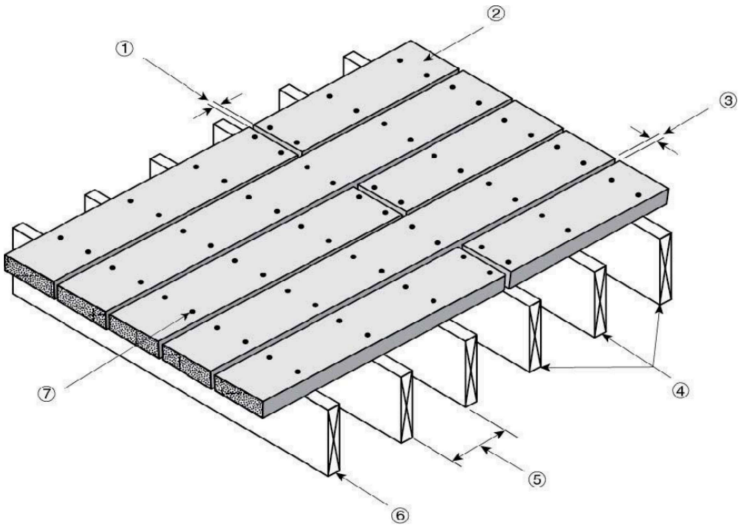


Figure 2. Installation details for the square edge Clubhouse® Deck products with exposed fasteners

1. 3 mm minimum end-to-end gapping, for installation above 0°C and below 21°C
2. Clubhouse® Deck square edge deck board
3. 3 mm minimum width-to-width gapping
4. minimum of three joists per plank
5. maximum joist spacing of 400 mm o.c.
6. joist designed to support applicable loads
7. two fasteners, 64 mm long, per support

## Manufacturing plant

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

| Product name | Manufacturing plant |
|---|---|
| | Brantford, ON, CA |
| Clubhouse® Deck | ⊘ |

⊘ 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 planks must be installed with supports spaced no greater than 400 mm o.c. Each plank must be supported by at least three supports.
- The products must be fastened to the wood joists with fasteners specified by the manufacturer that conform to Article 9.23.3.1., Standards for Nails and Screws, of Division B of the NBC 2015 and NBC 2020. The fasteners must have a corrosion-resistant coating or be made of stainless steel. The planks must be fastened with at least two 64-mm-long fasteners per support.

*Note: As of January 2004, pressure-treated lumber requires specific hot-dipped galvanized fasteners for satisfactory performance.*

- The products must be gapped end to end based upon the length of the plank and the temperature at installation.
  - The end-to-end gapping must be:
    - 3 mm for installations above 0°C and below 21°C
  - The width-to-width gapping must be:
    - 3 mm for installations above 0°C and below 21°C
- The products must not be installed at temperatures below 0°C
- The products can be used as stair treads with supports spaced no greater than 230 mm o.c.
- The products are not to be considered as an equivalent to dimensional lumber.
- The products' label or packaging must be identified with the manufacturer's name or logo and the phrase "CCMC 14150-R."

## Technical information

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

| Criteria number | Criteria name |
|---|---|
| CCMC-TG-067315.06-15 | CCMC Technical Guide for Exterior Decking Planks Made of Solid Core PVC Foam Capped with Acrylic Cap Layer |
| CCMC-TG-067315.06-20 | CCMC Technical Guide for Exterior Decking Planks Made of Solid Core PVC Foam Capped with Acrylic Cap Layer |

## Material requirements

**Table 1. Results of testing of basic physical and mechanical properties of the products**

| Property | | | Units | Requirement | Result (1) (2) |
|---|---|---|---|---|---|
| **Dimensional change** | **coefficient of linear expansion (thermal) longitudinal** | | $°C^{-1}$ | ≤ $2 \times 10^{-5}$ | $4.84 \times 10^{-5}$ (3) |
| | **coefficient of linear expansion (thermal) cross-sectional** | | | | $5.05 \times 10^{-5}$ (3) |
| | **coefficient of linear expansion (swelling)** | | % | ≤ 0.5, by 80% of specimens | < 0.00 |
| **Strength and stiffness** | **flexural rigidity (EI)** | **span-to-depth ratio within 18 to 21** | $kN·mm^2$ | > 300 000 | 269 000 (4) (5) |
| | **moment capacity ($M_R$)** | **span-to-depth ratio within 18 to 21** | N·mm | > 190 000 | 380 000 (5) |
| | **impact resistance (Gardner test)** | | % | ≤ 50% failure at 10 J | No failure |
| | **creep, recovery and load duration** (6) | | % | ≤ 25 for creep | 9 |
| | | | | ≥ 75 for recovery | 94 |
| | | | | No failure | Pass |
| **Strength and stiffness after aging** | **weathering** | **impact resistance** | % | ≥ 75 of non-weathered value | 86 (7) |
| | **accelerated aging** | **EI** | % | ≥ 50 of non-aged value | 99 |
| | | **$M_R$** | | | 98 |
| **Fastener holding capacity** | **fastener withdrawal strength (grooved-edge profile) EB-TY® hidden deck fastener (EBEOA)** | | N | ≥ 600 | 792 |
| | **fastener withdrawal strength (grooved-edge profile) TigerClaw® TC-G (Clubhouse® connect Clip)** | | | | 1 460 |

| Property | | Units | Requirement | Result (1) (2) |
|---|---|---|---|---|
| | **fastener withdrawal strength (square-edge profile) OMG FastenMaster® Cortex®** | | | 2 757 |
| | **lateral fastener strength (grooved-edge profile) EB-TY® hidden deck fastener (EBEOA)** | N | ≥ 720 | 980 |
| | **lateral fastener strength (grooved-edge profile) TigerClaw® TC-G (Clubhouse® connect Clip)** | | | 3 050 |
| | **lateral fastener strength (square-edge profile) OMG FastenMaster® Cortex®** | | | 3 890 |
| **Flame-spread rating** | | - | ≤ 200 | 70 |

**Notes:**

1 Average test results of six specimens, except for the “creep, recovery and load duration” results that are from three specimens.

2 Test results were obtained to classify the product and are not intended to be used as engineering design properties.

3 Performance result allowed based on the manufacturer’s gapping installation instructions. Clubhouse® Deck must not be installed at temperatures below 0°C.

4 Deemed acceptable based on modulus of elasticity (MoE ≥ 750 MPa) by test results.

5 Mean value of test results for solid- and grooved-edge boards.

6 Test results for grooved-edge boards.

7 Reported average of test results.

## Performance requirements

**Table 2. Results of testing of performance of the products under both concentrated static loads and impact loads**

| Property | | | Requirement | Result (1) |
|---|---|---|---|---|
| **Concentrated static load** | **decking at 50°C** | **minimum ultimate load (kN)** | ≥ 2.45 | ≥ 4.0 |
| | **decking at 20°C** | | | ≥ 5.2 |
| | **decking at -35°C** | | | ≥ 5.2 |
| | **decking at 50°C** | **maximum deflection under 0.89 kN load (mm)** | ≤ 2.0 | 5.6 (2) |
| | **decking at 20°C** | | | 4.2 (3) |
| | **decking at -35°C** | | | 3.7 (3) |

| Property | | | Requirement | Result [1] |
|---|---|---|---|---|
| **Following impact load of 102 N·m** | **decking at 50°C** | **minimum ultimate load (kN)** | ≥ 1.78 | no break |
| | | **maximum deflection under 0.89 kN load (mm)** | ≤ 2.0 | 3.91 [2] |

**Notes:**

1 Test results for grooved-edge planks with supports at 400 mm o.c.

2 Deemed acceptable. Although this result exceeds the 2.0 mm requirement, the additional deflection is not considered significant for material at 50°C.

3 Although this result exceeds the 2.0 mm requirement, the additional deflection is not considered significant based on the product's test result from creep and creep recovery testing in Table 1. Therefore, the result is deemed acceptable.

**Table 3. Results of testing of durability of the products**

| Property | Requirement | Result | |
|---|---|---|---|
| | | **S-P-F lumber** | **Clubhouse® Deck** |
| **Bending stiffness** | Mean percentage loss in bending stiffness (EI) after ultraviolet (UV) exposure [1] and accelerated aging [2] must be less than or equal to spruce lumber | 8.7% | –1.2% |
| **Bending strength** | Mean percentage loss in moment capacity ($M_R$) after UV exposure [1] and accelerated aging [2] must be less than or equal to spruce lumber | 32.6% | 1.1% |

**Notes:**

1 4 000 h of Cycle 1 as outlined in Appendix X3.1 of ASTM G 155-13, "Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials."

2 Five cycles of accelerated aging (wetting, freezing, thawing and drying).

**Table 4. Results of testing of performance of the products under concentrated static load – stair tread**

| Property | | | Requirement | Result [1] |
|---|---|---|---|---|
| **Concentrated static load** | **stair tread** | **minimum ultimate load (kN)** | ≥ 5 [2] | 18.15 |
| | **stair tread nosing** | | ≥ 5 [3] | 12.49 |
| | **stair tread** | **maximum deflection under 1 kN (mm)** | ≤ 0.75 | 0.873 [4] |

**Notes:**

| | |
|---|---|
| 1 | Test results are for solid-edge profile planks with stair stringers spaced at 230 mm o.c. at a test condition of 50°C. Three specimens were tested for each test. |
| 2 | Applied through a 75-mm-diam disk positioned at the centreline of the plank and midway between stringers. |
| 3 | Applied through a 38-mm-diam disk positioned along the outside edge of the nosing at the stringer location. |
| 4 | Deemed acceptable as the deflection is still very low at 50°C and the ultimate load is very high as well. Stringer spacing must be at 230 mm o.c. |

## Additional performance data

Data in this section does not form part of CCMC's Code compliance opinion.

**Table 5. Additional performance data of the product**

| Property | | Units | Reference value | Result |
|---|---|---|---|---|
| **Hardness (11.28-mm-diam ball)** | | kN | ≥ 1.8 | 3.439 |
| **Slip resistance (longitudinal)** | **wet condition** | slip index | ≥ 0.5 | 1.0 |
| | **dry condition** | | | 1.0 |
| **Slip resistance (transverse)** | **wet condition** | slip index | ≥ 0.5 | 0.86 |
| | **dry condition** | | | 0.97 |

# 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

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

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> 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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