

Evaluation Report CCMC 13665-R Accuspan/Accuspan Cap Solid Grooved Board Northernlite/Nothernlite Cap Solid Decking Board

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Accuspan/Accuspan Cap Solid Grooved Board and Northernlite/Nothernlite Cap Solid Decking Board”, when used as exterior deck boards and stair treads in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2010:

- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Article 9.4.2.3., Platforms Subject to Snow and Occupancy Loads
 - Article 9.4.3.1., Deflections
 - Article 9.8.9.1., Loads on Stairs and Ramps

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 14-25-321 (13665-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 2014-10-27 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.

2. Description

The “Accuspan/Accuspan Cap Solid Grooved Board and Northernlite/Nothernlite Cap Solid Decking Board” is a cellulosic/polymer composite decking made primarily of rice hulls and reclaimed/recycled high-density polyethylene (HDPE) with additives for UV resistance, anti-oxidants and colorants. The composite product is manufactured through a continuous extrusion process in planks of solid cross-section and grooved edges. The planks are manufactured in nominal dimensions of 24 mm x 130 mm and are available in 3.6-m, 4.88-m and 6.1-m lengths. Both sides of the product are finished in a simulated wood grain pattern; either side can be used as a walking surface. The product is intended to be used as exterior deck boards and stair treads to be installed over traditional structural wood framing spaced at 300 mm on centre (o.c.) and on stair stringers spaced at 300 mm o.c.

The “Accuspan Cap Solid Grooved Board and Northernlite Cap Solid Decking Board” is the same composition as the Accuspan and Northernlite board with a cap stock incorporating UV inhibitors.

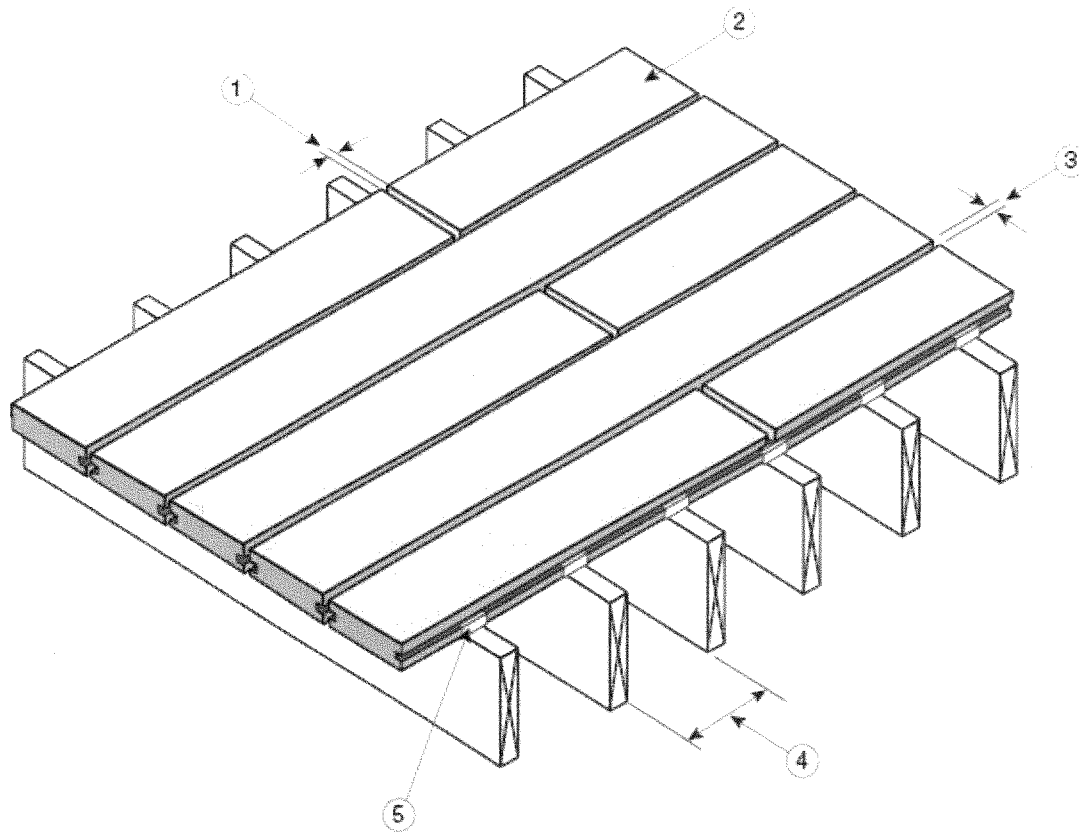


Figure 1. Installation details for the “Accuspan Solid Grooved Board”

1. gap ranging between 1.5 mm to 4.7 mm depending on length of plank and temperature at installation
2. “Accuspan Solid Grooved Board”
3. 4.7 mm spacing between boards
4. maximum joist spacing of 300 mm o.c.
5. fastener clip

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “Accuspan/Accuspan Cap Solid Grooved Board and Northernlite/Northernlite Cap Solid Decking Board” being used in accordance with the conditions and limitations set out below.

- The deck board must be installed with supports spaced no greater than 300 mm o.c.
- Each plank must be supported by at least three joists.
- The product must be fastened to the wood joists clips with fasteners specified by the manufacturer and conforming to Article 9.23.3.1., Standards for Nails and Screws, of Division B of the NBC 2010.
- The clips and fasteners must have a corrosion protection coating or be made of stainless steel.
- The clips must be fastened with a 64-mm-long fastener.
- The product can be used where termite protection is required.
- The product must be gapped end-to-end based on the length of the plank and the temperature at installation. The end-to-end gapping range must be between 4.2 mm for installations at a temperature below 7°C and 0.7 mm for installations at a temperature over 29°C.
- The width-to-width gapping must be 3 mm.
- The product can be used as stair treads on stringers space at 300 mm o.c.
- The product is **not** to be considered as an equivalent to dimensional lumber.

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Material Requirements

Table 4.1.1 Basic Physical and Mechanical Properties

Property		Unit	Requirement	Result	
Dimensional Change	Coefficient of linear expansion (thermal)	longitudinal	$^{\circ}\text{C}^{-1}$	$< 2 \times 10^{-5}$	2.92×10^{-5} ¹
		cross-sectional			4.28×10^{-5} ¹
	Coefficient of linear expansion (swelling)	oven-dry to vacuum pressure soak	%	< 0.5 , by 80% of specimens	-0.08
Strength and Stiffness	Flexural rigidity (EI)		kN·mm ²	$> 300\,000$	350 000
	Moment capacity (M _R)		N·mm	$> 190\,000$	218 000
	Impact resistance (IZOD impact, notched)		J/m	> 53.4	22.4 ²
Creep, recovery and load duration				< 25 for creep	27 ³
			%	> 75 for recovery	86
				No failure in step 6	Passed
Strength and Stiffness After Aging	Weathering	impact resistance	%	> 75 of non-weathered value	101
	Accelerated aging	% retention flexural rigidity	%	> 50 of non-aged value	87
		% retention moment capacity			95
Screw withdrawal	redry condition		N	≥ 600	2026
	wet/redry condition			≥ 720	2032
Lateral screw strength	redry condition	parallel	N	> 700	1453
		perpendicular			2369
	wet/redry condition	parallel			1454
		perpendicular			1194
Flame-spread rating				≤ 200	85
Smoke developed classification			No unit	Report	60 (Cap) 380 310 (Cap)

Notes to Table 4.1.1:

- ¹ CCMC deemed acceptable. The manufacturer's gapping installation instructions shall address the linear expansion values.
- ² CCMC deemed acceptable. The IZOD impact is a small-scale test used to characterize the material. Very low performance values show a sensitivity to a loss of impact strength when the product is significantly damaged by a notch, cut or split. The results of the large-scale impact floor tests are the primary performance indicator with respect to floor impact loads.
- ³ CCMC deemed acceptable performance for decking application based on other test results.

4.2 Performance Requirements

Table 4.2.1 Performance Under Both Concentrated Static Loads and Impact Loads

	Property	Requirement	Result ¹
Concentrated static load	decking at 50°C	minimum ultimate load (kN)	4.89
	decking at 20°C		4.56
	decking at 50°C	maximum deflection under 0.89-kN load (mm)	1.59
	decking at 20°C		1.21
Following impact load of 102 N·m	decking at 50°C	minimum ultimate load (kN)	1.78
	decking at 50°C	maximum deflection under 0.89-kN load (mm)	1.58

Note to Table 4.2.1:

¹ Test results for planks with supports at 300 mm o.c.

Table 4.2.2 Durability

Property	Requirement	Result	
		SPF Lumber	“Accuspan Deck Board”
Bending stiffness	Mean percentage loss in bending stiffness (EI) after ultraviolet (UV) exposure and accelerated aging must be less than or equal to spruce lumber	22.5%	9.6% 13.8% (Cap)
Bending strength	Mean percentage loss in moment capacity (M _R) after UV exposure and accelerated aging must be less than or equal to spruce lumber	24.5%	15% -0.7% (Cap)

Table 4.2.3 Decay and Termite Resistance

Property	Requirement	Result
Decay resistance	Mean percentage loss in weight and compressive strength after exposure to decay-causing fungi must be equal to or better than preservative-treated wood conforming to CAN/CSA-O80.1-M97, “Preservative Treatment of All Timber Products by Pressure Processes”	Passed
Termite resistance	Rating must be equal to or better than preservative-treated wood conforming to CAN/CSA-O80.1	Passed

Table 4.2.4 Performance Under Concentrated Static Load – Stair Tread

Property	Requirement		Result ¹	
	Minimum Ultimate Load (kN)	Maximum Deflection Under 1 kN (mm)	Applied Ultimate Load (kN)	Deflection Under 1 kN (mm)
Concentrated load	stair tread	5 ₂	5.75	1.07 ₄
	stair tread nosing	5 ₃	7.5	

Notes to Table 4.2.4:

- 1 Test results are for stair stringers spaced at 300 mm o.c.
- 2 Applied through a 75-mm-diameter disk positioned at the centre line of the plank and mid-way between stringers.
- 3 Applied through a 38-mm-diameter disk positioned along the outside edge of the nosing at the stringer location.
- 4 CCMC deemed deflection result was acceptable based on the higher applied ultimate load results.

4.3 Additional Performance Data

Data in this section does not form part of CCMC’s opinion in Section 1.

Table 4.3.1 Additional Performance Data¹

Property	Slip Index Reference value	Result
dry condition	≥ 0.5	0.57
		0.36 longitudinal (Cap) 0.46 transverse (Cap)
Slip resistance wet condition	≥ 0.5	0.53
		0.30 longitudinal (Cap) 0.39 Transverse (Cap)

Note to Table 4.3.1:

- 1 Results provided in this Table do not invalidate CCMC's opinion concerning the product's compliance with the NBC 2010.

Report Holder

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