



Evaluation Report CCMC 13350-R MaxiPLANK™, MaxiPANEL™, MultiSHAKE™, MaxiSHINGLE™, Fortex HD

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “MaxiPLANK™, MaxiPANEL™, MultiSHAKE™, MaxiSHINGLE™, Fortex HD”, when used as an exterior cladding applied to vertical walls of masonry or concrete, or as sheathing boards that are attached to wood or steel framing 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)(a), Division A, using the following acceptable solutions from Division B:
 - Sentence 5.6.1.1.(1), Required Protection from Precipitation
 - Sentence 9.27.1.1.(1), General (Cladding)
 - Sentence 9.27.1.1.(5), General (Cladding)
 - Clause 9.27.2.2.(1)(a), Minimum Protection from Precipitation Ingress (when installed in coastal areas)
 - Sentence 9.27.2.2.(2), Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.2.(5), Minimum Protection from Precipitation Ingress
 - Article 9.27.2.3., First and Second Planes of Protection
 - Article 9.27.3.1., Elements of the Second Plane of Protection
- 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:
 - Sentence 9.27.2.1.(1), Minimizing and Preventing Ingress and Damage

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

2. Description

The products are fibre-cement products made mainly of Type 10 or Type 30 Portland hydraulic cement, silica, and other additives and re-inforced integrally with cellulose fibres. They are intended for use as an exterior cladding applied to vertical walls of masonry or concrete, or as cementitious and wood sheathing boards that are attached to wood or steel framing, in new and retrofit constructions, subject to the conditions and limitations stated in Section 3 of this Report. These products may be supplied textured or embossed, and primed or unprimed. The product is mechanically fastened to the framing using corrosion-resistant fasteners as required by the manufacturer. All the products are available in several different surface patterns. Additional lengths and widths may also be available by special order from the manufacturer.

“MaxiPLANK™” Lap Siding

This product is manufactured in 3 655-mm-long x 133-mm- to 305-mm-wide x 8-mm-thick planks. The planks are installed over wood strapping with the horizontal joints overlapping a minimum of 32 mm. Vertical joints of the planks butt at the framing members (studs). See the manufacturer’s installation instructions dated December 2009 for details and restrictions.

“MaxiPANEL™” Siding

This product is manufactured in 2 438-mm- to 3 048-mm-long x 1 219-mm-wide x 8-mm- to 11-mm-thick panels. The panels are installed over wood strapping that is attached to the framing members via corrosion-resistant nails. Vertical joints of the panels butt over studs. See the manufacturer’s installation instructions dated July 2010 for details and restrictions.

“MultiSHAKE™” Cladding

This product is manufactured in 406-mm-wide x 1 219-mm-long x 6-mm-thick panels. The shake panels are installed over wood strapping that is attached to the framing members via corrosion-resistant nails. Vertical joints of the shake panels butt over studs. See the manufacturer’s installation instructions dated July 2010 for details and restrictions.

“MaxiSHINGLE™” Cladding

This product is manufactured in 457-mm-long x 152-mm- to 305-mm-wide x 6-mm-thick cladding shingles. The shingles are installed over wood strapping that is attached to the framing members via corrosion-resistant nails. See the manufacturer’s installation instructions dated May 2010 for details and restrictions.

“FORTEX HD” Lap Siding¹

This product is manufactured in 3 655-mm-long x 133-mm- to 305-mm-wide x 12-mm-thick planks with a 4-mm-deep and 32-mm-wide cutout along the length of the bottom edge. The planks are installed beginning from the bottom of the wall with a minimum overlap of 32 mm. Vertical joints of the planks shall butt over the framing members (studs). The lap siding is fastened through the top edge of the planks (blind-nailed) with corrosion-resistant nails or screws.

¹ *Note that this is the only product that is finished at the Le Gardeur plant after being manufactured at the Mexico plants.*

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “MaxiPLANK™, MaxiPANEL™, MultiSHAKE™, MaxiSHINGLE™, Fortex HD” being used in accordance with the conditions and limitations set out below.

- The products are intended for use as exterior cladding applied to vertical walls of masonry or concrete or as sheathing boards that are attached to wood or steel framing in new and retrofit constructions.
- At least one layer of wall sheathing membrane conforming to Article 9.27.3.2., Sheathing Membrane Material Standard, of Division B of the NBC 2010 must be applied beneath the cladding products.
- The products must be installed over strapping, in both coastal and non-coastal areas as defined by Sentence 9.27.2.2.(5), Minimum Protection from Precipitation Ingress, of Division B of the NBC 2010, in conformance with Articles 9.27.5.3., Furring, and 9.27.5.4., Size and Spacing of Fasteners, and Sentence 9.27.5.7.(2), Penetration of Fasteners, of Division B of the NBC 2010, and in conjunction with a minimum vented air space or capillary break of 10 mm conforming to Clause 9.27.2.2.(1)(a) and Sentence 9.27.2.2.(2) of Division B of the NBC 2010.
- The drained and vented air space described in Clause 9.27.2.2.(1)(a) of Division B of the NBC 2010 must remain unobstructed.
- The installation of the products is limited to geographical areas where the hourly wind pressures, based on a probability of being exceeded in any one year of 1:50, are less than 1 kPa¹ and subject to the installation conditions stated below. Table 4.1.4 lists the wind load test results.

¹ The product tested showed capacity to adequately transmit the wind loads to the points of support without any fracture or permanent deterioration of the surfaces.

“MaxiPLANK™” and “FORTEX HD” Lap Siding

For the wind load resistance information to be valid, the product must be installed (as a minimum) on 11-mm-thick oriented strandboard (OSB) sheathing with 19-mm x 64-mm vertical wood furring strips spaced at 400 mm on centre (o.c.), a 32-mm plank overlap, and using 38-mm roof nails attached to the framing members.

“MaxiPANEL™” Siding

For the wind load resistance information to be valid, the product must be installed (as a minimum) on 11-mm-thick OSB sheathing with 19-mm x 64-mm vertical wood furring strips spaced at 400 mm o.c., a maximum horizontal nail row spacing of 260 mm, and using 38-mm roof nails attached to the framing members.

“MultiSHAKE™ and MaxiSHINGLE™”

For the wind load resistance information to be valid, the product must be installed (as a minimum) on 11-mm-thick OSB sheathing with 19-mm x 64-mm vertical wood furring strips spaced at 400 mm o.c. and overlapping and nailing as per the manufacturer’s installation manuals referenced in Section 2 of this Report.

- Installation of the products is limited to applications where the impact load resistance to small soft bodies² is not required or where the cladding system can be easily repaired or replaced, based on impact test performance (see Table 4.1.3).

² Small soft bodies are defined as bodies that induce localized damage, as well as transmit energy to the rest of the assembly (small bodies induce localized damage while the softness of the bodies imparts energy to the rest of the assembly).

- The air space between the substrate and the products that is created as a result of the overlap of the cladding boards must remain unobstructed.
- Installation of the products must meet the requirements of Article 9.27.3.8., Flashing Installation, and Subsections 9.27.4., Sealants, and 9.27.5., Attachment of Cladding, of Division B of the NBC 2010.
- The products must be installed in conjunction with materials conforming to Articles 9.27.3.2., Sheathing Membrane Material Standard, and 9.27.3.7., Flashing Materials, and Subsections 9.27.4., Sealants, and 9.27.5., Attachment of Cladding, of Division B of the NBC 2010.
- The possibility of moisture accumulation within the wall construction is mainly a function of the level of workmanship of the elements constituting the second plane of protection as defined in Article 9.27.2.3., First and Second Planes of Protection, of Division B of the NBC 2010, such as wall sheathing membrane, flashing, sealants and attachment of siding. A high level of quality control at all stages of the exterior wall construction is imperative for obtaining an acceptable performance.
- The requirements of Article 9.10.16.1., Required Fire Blocks in Concealed Spaces, of Division B of the NBC 2010 must be met.
- The technical opinion in this Report is limited to primed/unprimed/textured, uncoated or painted products. Low permeance coatings may affect the drying potential of the product as well as the substrate on which it is installed. Such a situation could lead to premature deterioration of the substrate and other elements in the wall assembly. The manufacturer’s recommendations for type and characteristics of coatings to be used in conjunction with the cladding must be followed.
- The product must be installed in accordance with the manufacturer’s current instructions.
- This Evaluation Report is applicable only to products identified with the following: “CCMC 13350-R.”

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 General

Table 4.1.1 Test results for material and physical properties¹

Property		Requirement	Result
Dimensional tolerance	length (mm)	± 3.0	± 1.5
	width (mm)		± 0.5 to ± 1.0
Thickness tolerance (mm)		± 1.6	± 0.13 to ± 0.30
Squareness (mm/m)		± 4.0	± 0.5 to ± 0.7
Edge straightness (mm/m)		± 2.6	± 0.3
Water absorption (%) (by mass)		≤ 40	35.1
Water vapour transmission (ng/m ² ·s)		Report ²	1 353
Density (kg/m ³)		≥ 950	1 316

Notes to Table 4.1.1:

- ¹ The test results presented in this table are for the 8-mm-thick x 133-mm-wide and 305-mm-wide “MaxiPLANK™” Lap Siding.
- ² The water vapour transmission shall be reported because the product can only be installed over strapping in a rainscreen system, thus there is no impact on condensation control.

Table 4.1.2 Test results for performance requirements¹

Property		Requirement	Result
Dimensional change at 50 - 90% RH (%)		≤ 0.20	0.1
Flexural strength (MPa)	machine direction (wet)	≥ 7.0	19.2
	cross direction (wet)		11.4
Fastener pull resistance (N)		≥ 28 x board thickness in mm	931
Freeze-thaw cycling		Loss of mass ≤ 3%	Pass
		Loss in flexural strength ≤ 15%	Pass
Watertightness		No formation of drops of water on underside	Pass
Warm water resistance		No visible cracks	Pass
		Loss in flexural strength ≤ 15%	Pass

Note to Table 4.1.2:

- ¹ The test results presented in this table have been generated based on the 8-mm-thick x 133-mm-wide and 305-mm-wide “Maxi-PLANK™” Lap Siding.

Table 4.1.3 Test results for impact resistance^{1 2}

Impact Body	Dynamic Mass (kg)	Energy (N·m)	Result
Safety impact			
Large soft	50	100	Pass
Small hard	1	10	Pass
Retention of performance impact			
Large soft	50	34	Pass
Smaller soft	3	60	Fail ³
Small hard	1	10	Pass

Notes to Table 4.1.3:

- ¹ Large soft bodies are designed to transfer a significant amount of energy to the cladding and to the wall assembly. Small hard bodies are capable of causing localized impact damage without any appreciable transmission of energy to the wall assembly. Smaller soft bodies are smaller and harder than the large soft bodies, and larger and softer than small hard bodies. They are designed to induce localized damage, as well as transmit energy to the rest of the assembly.
- ² The test results presented in this table are for the 8-mm-thick x 133-mm-wide and 305-mm-wide “MaxiPLANK™” Lap Siding.
- ³ Because the product did not demonstrate capacity to retain the performance of the cladding under impact loads that induce localized damage as well as transmit energy to the rest of the assembly, the product will be limited to applications where such performance is not required or where the cladding system can be repaired or replaced easily. The CCMC Technical Guide specifies that for cladding systems that can be repaired or replaced easily, lower impact resistance values may be accepted down to 6 N·m for small soft impact.

Table 4.1.4 Test results for wind load resistance^{1 2}

Design Value $Q_{50} < 1.00$ kPa	Recorded Maximum Deflection (mm)	Location of Recorded Maximum Deflection
Deflection on 133-mm-wide “MaxiPLANK™” ($P_1 = \pm 1\,000$ Pa; $P_2 = \pm 1\,460$ Pa; $P_3 = \pm 2\,180$ Pa)		
2 180 Pa	-6.56	Centre of exterior face
Residual (after 1 min)	-0.13	Centre of exterior face
-2 180 Pa	6.36	Centre of interior face
Residual (after 1 min)	0.06	Centre of interior face

Table 4.1.4 Test results for wind load resistance^{1 2} (cont.)

Design Value $Q_{50} < 1.00$ kPa	Recorded Maximum Deflection (mm)	Location of Recorded Maximum Deflection
Deflection on 305-mm-wide “MaxiPLANK™” ($P_1 = \pm 1\,000$ Pa; $P_2 = \pm 1\,460$ Pa; $P_3 = \pm 2\,180$ Pa)		
2 180 Pa	-6.50	Centre of exterior face
Residual (after 1 min)	-0.15	Centre of exterior face
-2 180 Pa	6.86	Centre of exterior face
Residual (after 1 min)	0.07	Centre of exterior face

Notes to Table 4.1.4:

- 1 The wind load resistance was performed solely on one sample each of the 133-mm-wide and 305-mm-wide “MaxiPLANK™”. These were considered as the worst-case scenarios relative to the other cladding products included in this Report.
- 2 The samples were constructed as follows:
- **133-mm-wide “MaxiPLANK™” sample composition:**
 - 8 mm thick, 133 mm wide, 32 mm plank overlap, blind nailed, 102 mm exposure and 38-mm roof nails;
 - 19-mm x 64-mm vertical wood furring strips at 400 mm o.c. over 11-mm OSB sheathing; and
 - 38-mm x 150-mm 18 ga. steel studs at 400 mm o.c.
 - **305-mm-wide “MaxiPLANK™” sample composition:**
 - 8 mm thick, 305 mm wide, 32 mm plank overlap, face nailed, 273 mm exposure, and 38-mm roof nails;
 - 19-mm x 64-mm vertical wood furring strips at 400 mm o.c. over 11-mm OSB sheathing; and
 - 38-mm x 150-mm 18 ga. steel studs at 400 mm o.c.

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