



Evaluation Report CCMC 12987-R Allura Lap Siding, Shapes Siding and Vertical Siding

MASTERFORMAT:	07 46 45.01
Evaluation issued:	2000-11-17
Re-evaluated:	2015-10-15
Revised:	2018-07-12

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Allura Lap Siding, Shapes Siding and Vertical Siding”, when used as an exterior cladding applied to walls of masonry or concrete, as well as, cementitious and wood sheathing boards that are attached to wood or steel framing, in new and retrofit construction 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 Plane 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.

Ruling No. 03-14-103 (12987-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 2013-10-10 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 products are fibre cement planks, panels and shingles/shakes made mainly of hydraulic cement, silica, and other additives and reinforced integrally with cellulose fibres. The products are manufactured using the Hatschek process and steam autoclave. The products may be supplied with the surfaces textured or embossed. The products are mechanically fastened to the framing using corrosion resistance fasteners. The products are available in different lengths, widths, and thicknesses as described in Table 2.1.

Table 2.1 Description of “Allura Lap Siding, Shapes Siding and Vertical Siding”

Product		Width (mm)	Length (mm)	Thickness (mm)
Lap Siding	Smooth	133	3 657	7.9
		159		
		184		
		210		
		235		
		305		
	Cedar	133	3 657	7.9
		159		
		184		
		210		
		235		
		305		
	Beaded Smooth	184	3 657	7.9
Textured Beaded Lap	184	3 657	7.9	
Textured Dutch Lap	210	3 657	7.9	
Shapes Siding	Perfection Shingle	210	3 657	11.1
	Random Square Straight Edge	298	1 219	7.9
		406		
	Random Square Staggered Edge	406	1 219	7.9
	Half Rounds	406	1 219	7.9
	Octagons	406	1 219	7.9
	Individual Shakes	159	457	6.4
210				
305				
Vertical Siding	Cedar No Groove	1 219	2 438	7.9
			2 743	
			3 048	
	Cedar 8-in. Groove	1 219	2 438	7.9
			2 743	
			3 048	
	Smooth	1 219	2 438	7.9
			2 743	
			3 048	
	Stucco	1 219	2 438	7.9
			2 743	
			3 048	

3. Conditions and Limitations

CCMC’s compliance opinion in Section 1 is bound by “Allura Lap Siding, Shapes Siding and Vertical Siding” being used in accordance with the conditions and limitations set out below.

- The products are intended for use as exterior cladding in new and retrofit construction, applied to vertical walls of masonry or concrete, as well as on cementitious and wood sheathing boards that are attached to wood or steel framing, in new and retrofit construction.

- The products are permitted in the construction of buildings required to be of combustible or noncombustible construction in accordance with Article 3.1.5.1., Noncombustible Materials, of Division B of the NBC 2010.
- 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 are not suitable for use as a structural sheathing for bracing purposes.
- The products should terminate at least 200 mm above grade level.
- The products must be installed with a minimum 10-mm air space, in both coastal and non-coastal areas as defined by Sentence 9.27.2.2.(5) 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 possibility of moisture accumulation within the wall construction is mainly a function of the ability of the wall assembly to deflect bulk water entry; the physical properties of the cladding being installed and its impact on the thermal, air leakage and vapour diffusion characteristics of the existing wall must be in accordance with Appendix Note A-5.1.2.1.(1), Application (Environmental Separation), of Division B of the NBC 2010.
- The requirements of the NBC 2010 regarding fire stops must be implemented.
- The products must be installed with suitable flashing to drain any incidental water from the drainage cavity to the exterior and to protect the exposed top edge of the cladding.
- The product must be installed in conjunction with materials conforming to Articles 9.27.3.7., Flashing Materials, and 9.27.4.2., Materials (Sealants), and installed in conformance with Articles 9.27.3.8., Flashing Installation, and 9.27.4.1., Required Sealants, of Division B of the NBC 2010.
- The attachment of the product must be in conformance with Sentence 9.27.5.1.(1), Attachment, and Articles 9.27.5.5., Fastener Materials, of Division B of the NBC 2010.
- The product must be installed in accordance with the manufacturer’s current instructions. A high level of quality control at all stages of the exterior wall construction is imperative for obtaining an acceptable performance.
- The installation of the “Lap Siding” and “Shapes Siding” 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 0.65 kPa.
- The installation of the “Vertical Siding” product 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 0.55 kPa.
- This Evaluation Report is applicable only to products identified with the following phrase: “CCMC 12987-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 (Dimensional Tolerances)

The dimensional measurements of products are summarized in Tables 4.1.1, 4.1.2 and 4.1.3.

Table 4.1.1 Results of Dimensional Measurement of “Lap Siding”

Property	Requirement	Lap Siding														
		Smooth						Cedar						Beaded Smooth	Textured Beaded Lap	Textured Dutch Lap
		Width of Siding (mm)														
		133	159	184	210	235	305	133	159	184	210	235	305	184	184	210
Length (mm)	± 3.0	0.4	-1.6	8.4 ¹	0.6	2.4	-3.6 ¹	-1.6	-0.6	0.4	-2.4	-1.9	-1.6	-2.6	-4.6 ¹	-1.6
Width (mm)	± 3.0	0.6	0.3	-1.9	0.5	1.1	0.2	-0.4	0.3	0.9	0.3	0.0	-0.8	-0.8	0.5	2.5
Thickness (mm)	± 1.6	-0.6	-0.6	-1.4	0.7	-0.8	-0.5	-0.6	-0.4	-0.2	-0.3	-0.3	-0.6	0.1	0.3	-0.3
Squareness (mm/m)	± 4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Edge Straightness (mm/m)	± 2.6	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0

Note to Table 4.1.1:

- ¹ The product did not meet dimensional tolerance requirement in respect to its length. However, it should not affect the overall performance of the cladding.

Table 4.1.2 Results of Dimensional Measurement of “Shapes Siding”

Property	Requirement	Shapes Siding									
		Perfection Shingle	“Random Square/ Straight Edge”			“Random Square/ Staggered Edge”	Half Rounds	Octagons	Individual Shakes		
			210	298	406				406	406	406
		Width of Siding (mm)									
Length (mm)	± 3.0	-1.1	-1.6	0.0	-0.8	-1.6	-1.3	-0.8	-1.6	0.3	
Width (mm)	± 3.0	0.0	-1.6	-0.8	-0.8	-0.8	-0.3	0.0	-0.8	1.1	
Thickness (mm)	± 1.6	-0.6	-0.4	-0.3	-0.3	-0.2	-0.1	-0.3	-0.2	-0.3	
Squareness (mm/m)	± 4.0	0.0	-0.8	-0.8	0.0	0.8	0.0	0.0	0.0	0.0	
Edge Straightness (mm/m)	± 2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Table 4.1.3 Results of Dimensional Measurement of “Vertical Siding”

Property	Requirement	Vertical Siding											
		“Cedar” no Groove			“Cedar” 8-in. Groove			“Smooth”			“Stucco”		
		Width of Siding (mm)											
		2 438	2 743	3 048	2 438	2 743	3 048	2 438	2 743	3 048	2 438	2 743	3 048
Length (mm)	± 3.0	-1.9	0.1	-1.7	-0.4	-1.6	0.0	-0.4	-0.7	-4.0 ¹	-1.2	-3.9 ¹	-1.7
Width (mm)	± 3.0	-0.2	-0.2	-0.2	-1.2	-2.9	-2.2	-0.2	-0.2	-0.2	-0.5	-0.2	0.1
Thickness (mm)	± 1.6	-0.3	-0.4	-0.2	-0.8	0.0	-0.4	-0.9	-0.7	-0.7	-0.3	-0.6	-0.5
Squareness (mm/m)	± 4.0	2.4	0.0	1.0	1.0	0.0	1.0	0.9	1.0	1.0	0.0	2.0	2.0
Edge Straightness (mm/m)	± 2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note to Table 4.1.3:

¹ The product did not meet dimensional tolerance requirement in respect to its length. However, it should not affect the overall performance of the cladding.

4.2 Prescriptive Requirements

Table 4.2.1 Results of Testing for Prescriptive Requirements of “Individual Shakes” and” Perfection Shingle” (“Shapes Siding”)

Property	Requirement	Results		
		“Individual Shakes”	“Perfection Shingle”	
Water absorption (%) by mass	≤ 40	34	32	
Density (kg/m ³)	≥ 950	1300	1307	
Dimensional change: 7-day immersion to 14-day immersion at 30% RH	XD ¹ MD ²	< 0.20	-0.0006	0.0003
			-0.0072	0.0000
Flexural strength (MPa)	XD MD	> 7.0	9.4	14.9
			14.1	17.9
Fastener pull-through resistance	≥ 163	614		
Water vapour transmission	Report Value	3670	441	
Freeze-thaw resistance	loss of mass (%)	≤ 3.0	1.8	-0.6
	loss of flexural strength (%)	≤ 15	-29 ³	-1 ³

Property		Requirement	Results	
			“Individual Shakes”	“Perfection Shingle”
no deleterious effects		–	Pass	
Watertightness		No formation of any drops on underside	Pass	
Warm water resistance	loss of flexural strength (%)	< 15	–24 ³	–5 ³
	no deleterious effects	–	Pass	

Notes to Table 4.2.1:

- 1 XD refers to cross-machine direction of the product.
- 2 MD refers to machine-direction of the product.
- 3 Negative values indicate product gain strength.

4.3 Performance Requirements

Table 4.3.1 Results of Testing for Impact Resistance of “Textured Dutch Lap” (“Lap Siding”)

Impact Body		Dynamic Mass (kg)	Energy (N·m)	Results
Safety impact	large soft	50	100	Pass
	small hard	1	10	N/A ¹
Retention of performance impact	large soft	50	34	Pass
	small soft	30	60	Fail ²
	small hard	1	10	N/A ¹

Notes to Table 4.3.1:

- 1 The test was not conducted due to the specimen failure in small soft test.
- 2 The product did not meet the retention of performance impact. For cladding that can be repaired or replaced easily, however, lower impact resistance values may be accepted.

Table 4.3.2 Description and Results of Testing for Wind Load Resistance ($Q_{50} < 0.65$ kPa)

Product	Frame	Stud Spacing (mm)	Fastening	Rating (kPa)	Results
Perfection Shingle (Shapes Siding)	wood studs 2 × 4 with 11-mm OSB	406	51-mm 6D ring shank siding nails into sheathing	$Q_{50} < 0.65$	Pass
305-mm Cedar (Lap Siding)	wood studs 2 × 4	406	64-mm 6D ring shank siding nails into framing	$Q_{50} < 0.65$	Pass
235-mm Cedar (Lap Siding)	metal studs 16 gauge	406	# 8 41-mm ribbed bugle-head screws, blind nailed into framing	$Q_{50} < 0.65$	Pass
Individual Shakes (Shapes Siding)	wood studs 2 × 4 with 11-mm OSB	406	44-mm roofing nails, blind nailed into sheathing	$Q_{50} < 0.65$	Pass

Table 4.3.3 Description and Results of Testing for Wind Load Resistance ($Q_{50} < 0.55$ kPa)

Product	Frame	Stud Spacing (mm)	Fastening	Rating (kPa)	Results
Cedar 8-in. Groove (Vertical Siding)	wood studs 2 × 4	406	51-mm 6D siding nail, 152-mm edge and 305-mm in-field	$Q_{50} < 0.55$	Pass

Table 4.3.4 Results of Testing for Wind Load Resistance of “Perfection Shingle” (“Shapes Siding”)

Cycle	Pressure (Pa): $Q_{50} \leq 0.65$ kPa	Deflection at Mid Span of Specimen
Sustained loads (P_1, P_1')	± 100	0.064/–0.141
	200	0.123/–0.269
	300	0.181/–0.386
	400	0.243/–0.507
	± 500	0.414/–0.642
	± 650 (P_1)	0.625/–0.881
	Residual	0.038/–0.120
Cyclic loads (P_2, P_2')	0 to ± 1,050 (P_2)	0.023/–0.163
Gust loads (P_3, P_3')	0 to ± 1,570 (P_3)	1.008/–1.770

Table 4.3.5 Results of Testing for Wind Load Resistance of 305-mm “Cedar” (“Lap Shingle”)

Cycle	Pressure (Pa): $Q_{50} \leq 0.65$ kPa	Deflection at Mid Span of Specimen
Sustained loads (P_1, P_1')	± 100	0.09/–0.153
	200	0.163/–0.301
	300	0.233/–0.429
	400	0.310/–0.565
	± 500	0.387/–0.683
	± 650 (P_1)	0.508/–0.902
	Residual	0.031/–0.059
Cyclic loads (P_2, P_2')	0 to ± 1,050 (P_2)	0.034/–0.124
Gust loads (P_3, P_3')	0 to ± 1,050 (P_3)	1.267/–1.857

Table 4.3.6 Results of Testing for Wind Load Resistance of 235-mm “Cedar” (“Lap Shingle”)

Cycle	Pressure (Pa): $Q_{50} \leq 0.65$ kPa	Deflection at Mid Span of Specimen
Sustained loads (P_1, P_1')	± 100	0.043/–0.079
	200	0.086/–0.132
	300	0.129/–0.200
	400	0.165/–0.267
	± 500	0.204/–0.327
	± 650 (P_1)	0.265/–0.417
	Residual	0.009/–0.015
Cyclic loads (P_2, P_2')	0 to ± 1,050 (P_2)	0.021/–0.033
Gust loads (P_3, P_3')	0 to ± 1,570 (P_3)	0.623/–0.712

Table 4.3.7 Results of Testing for Wind Load Resistance of “Individual Shakes” (“Shapes Siding”)

Cycle	Pressure (Pa): $Q_{50} \leq 0.65$ kPa	Deflection at Mid Span of Specimen
Sustained loads (P_1, P_1')	± 100	0.063/–0.119
	200	0.125/–0.238
	300	0.191/–0.319
	400	0.254/–0.426
	± 500	0.328/–0.557
	± 650 (P_1)	0.433/–0.729
	Residual	0.036/–0.105
Cyclic loads (P_2, P_2')	0 to ± 1,050 (P_2)	0.135/–0.162
Gust loads (P_3, P_3')	0 to ± 1,570 (P_3)	1.058/–1.583

Table 4.3.8 Results of Testing for Wind Load Resistance of 8-in. “Cedar Groove” (“Vertical Siding”)

Cycle	Pressure (Pa): $Q_{50} \leq 0.55$ kPa	Deflection at Mid Span of Specimen
Sustained loads (P_1, P_1')	± 100	0.056/–0.057
	200	0.122/–0.141
	300	0.186/–0.207
	400	0.255/–0.291
	± 550 (P_1)	0.370/–0.371
	Residual	0.043/–0.052
Cyclic loads (P_2, P_2')	0 to ± 880 (P_2)	0.070/–0.082
Gust loads (P_3, P_3')	0 to $\pm 1\ 320$ (P_3)	0.937/–0.909

Report Holder

Plycem
15055 Woodham Drive
Houston, Texas 77073

Telephone: (844) 425-5872

Email: Sherrington@elementia.com

Web: www.allurausa.com

Plant(s)

White City, Oregon, U.S.A.
Roaring River, North Carolina, U.S.A.

Disclaimer

This Report is issued by the Canadian Construction Materials Centre, a program of NRC Construction at the National Research Council of Canada. The Report must be read in the context of the entire CCMC Registry of Product Evaluations, including, without limitation, the introduction therein which sets out important information concerning the interpretation and use of CCMC Evaluation Reports.

Readers must confirm that the Report is current and has not been withdrawn or superseded by a later issue. Please refer to http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/ccmc_index.html, or contact the Canadian Construction Materials Centre, NRC Construction, National Research Council of Canada, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6. Telephone (613) 993-6189. Fax (613) 952-0268.

NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this Report are directed to those who have the appropriate degree of experience to use and apply its contents. This Report is provided without representation, warranty, or guarantee of any kind, expressed, or implied, and the National Research Council of Canada (NRC) provides no endorsement for any evaluated material, product, system or service described herein. NRC accepts no responsibility whatsoever arising in any way from any and all use and reliance on the information contained in this Report. 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.

Date modified:
2015-11-06