



# TECHNICAL DATA SHEET

Effective May 14, 2015

## Cempanel® Vertical Siding

## fastened to wood furring

All national, state, and local building code requirements must be followed and where they are more stringent than the Cempanel® vertical siding installation requirements, state and local requirements will take precedence.

### Document Scope

The provisions of this document apply to Commercial and Multifamily projects with minimum 3/4" wood furring not exceeding a height of 75 feet. For additional solutions, please reference ICC-ES Engineering Service Report, ESR-1844, available at [JamesHardie.com](http://JamesHardie.com).

### General Description

Cempanel® vertical siding is a noncombustible fiber-cement panel siding, manufactured by James Hardie Building Products. All James Hardie manufacturing plants are third party quality assurance certified by Intertek Testing Services.

### Product Dimensions

Thickness – 5/16 inch      Length – 96, 108, or 120 inches      Width – 48 inches

### Product Composition

Cempanel® vertical siding is a Grade II, Type A, fiber-cement flat sheet as defined by ASTM C 1186. The panels are manufactured by the Hatschek process and cured by high pressure steam autoclaving.

### Code Compliance

#### - Cempanel® vertical siding fiber-cement complies with:

ICC-ES AC90 Acceptance Criteria on Fiber Cement Siding used as Exterior Siding, The 2006, 2009, and 2012 International Building Code® (IBC) Section 1404.10 and 2006, 2009, and 2012 International Residential Code® (IRC) Table R703.4 and Section R703.10.1 as ASTM C 1186-08 Standard Specification Grade II, Type A, Non-Asbestos Fiber-Cement Flat Sheets.

#### - Fire Characteristics:

Cempanel® vertical siding is deemed a noncombustible building material in accordance with ASTM E 136, Cempanel® vertical siding may be used in ASTM E 119 fire resistance rated assemblies as listed by Warnock Hersey (for more information contact James Hardie at 1-877 236-7526 or [Multi.Family@JamesHardie.com](mailto:Multi.Family@JamesHardie.com)):

- 60 minute designs - JH/WA 60-01, JH/WA 60-09, JH/WA 60-10
- 120 minute designs - JH/WA 120-02, JH/WA 120-04

Cempanel® vertical siding is a Class A product according to 2006, 2009, and 2012 International Building Code® (IBC) Section 803.1.1. Surface burning characteristics in accordance with ASTM E 84:

Flame Spread Index ≤ 0 and Smoke Developed Index ≤ 5.

#### - Wind Design ~ Allowable Fastener Spacing:

The Design Load Table, Table 2, shown in this sheet provides allowable fastener spacing to wood furring installed over minimum 20 gauge metal or wood studs. This table is intended for projects not exceeding a height of 75 feet.

The Design Load Table shown in this sheet provides tested assemblies which are in no way meant to be an exact description of all the conditions on any specific project.

James Hardie recognizes that each project has specific conditions which must be taken into account which cannot be accurately captured by an engineered wind speed table. It is for this reason that the Design Load Table shown in this sheet provides the allowable design load for each configuration.

### Table 1, Cempanel® vertical siding ASTM C 1186 Physical Properties and Supplementary Requirements

Property		Requirement	Pass/Fail
<b>Dimensional Tolerances</b>	Length	± 0.5%	Pass
	Width	± 0.5%	
	Thickness	± 1.6 mm	
	Squareness	< 10.9 mm	
	Edge Straightness	< 10.9 mm	
<b>Dimensional Variation</b>	Length	< 6.0 mm	Pass
	Width	< 6.0 mm	
	Thickness	< 2.4 mm	
<b>Water Absorption, % by mass</b>		As reported	Note 1
<b>Density, kg/m³</b>		As reported	Note 1
<b>Moisture Movement</b>	30-90% Relative Humidity	As reported	Note 1
	After 48-hour saturation	As reported	
<b>Flexural Strength</b>	Wet conditioned, MPa	> 7.0 MPa	Pass
	Equilibrium conditioned, MPa	> 10.0 MPa	
	Freeze/Thaw, % wet retention	≥ 80%	
	Warm Water, % wet retention	≥ 85%	
<b>Moisture Content, %</b>		As reported	Note 1
<b>Water Tightness</b>		No drop formation	Pass
<b>Warm Water Resistance, Observations</b>		No visible cracks or structural alteration	Pass
<b>Heat/Rain Resistance</b>		No visible cracks or structural alteration	Pass
<b>Freeze/Thaw (Frost) Resistance</b>	Observations	No visible cracks or structural alteration	Pass
	Mass Loss, %	≤ 3.0%	
<b>Surface Burning Characteristics</b>		FSI = 0, SDI ≤ 5	Pass

Note 1: No pass/fail requirement, results are reported

Warnock Hersey  
AUTHORIZATION TO  
MARK



LISTED

Client # 8518,  
17832





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**Table 2, Wind Design Table**

Allowable Wind Speed (mph) for Cempanel Siding (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

Product	Minimum Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing (in.)	Frame Type	Stud Spacing (in.)	Furring Type & Dimensions	Allowable Design Load (psf)	Building Height <sup>2,5</sup> (ft.)	2012 IBC <sup>7</sup> (Ultimate Design Wind Speed, $V_{ult}^3$ )			2012 IRC 2009, 2006 IBC & IRC <sup>7</sup> (Basic Wind Speed, $V_{asd}^4$ )		
										B	C	D	B	C	D
										Wind exposure category			Wind exposure category		
Cempanel®	5/16	48	No. 8 X 1.25" long X 0.323" HD ribbed bugle head screws	6" O.C. into furring only	2X4 wood or 20 ga. steel framing	16	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-53.6	0-15	193	175	159	149	135	123
									20	193	170	155	149	132	120
									25	193	166	152	149	129	118
									30	193	163	150	149	126	116
									35	189	160	148	146	124	114
									40	185	158	146	143	122	113
									45	179	154	143	138	119	111
									50	179	154	143	139	120	111
									55	177	153	142	137	119	110
									60	175	152	141	135	117	109
									65	154	134	125	120	104	97
70	153	133	124	118	103	96									
75	151	132	123	117	102	96									
Cempanel®	5/16	48	No. 8 X 1.25" long X 0.323" HD ribbed bugle head screws	8" O.C. into furring only	2X4 wood or 20 ga. steel framing	16	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-43.8	0-15	174	158	144	135	122	111
									20	174	154	140	135	119	109
									25	174	150	138	135	116	107
									30	174	147	135	135	114	105
									35	171	145	134	132	112	103
									40	167	143	132	129	111	102
									45	164	141	131	127	109	101
									50	162	140	129	125	108	100
									55	160	138	128	124	107	99
									60	158	137	127	122	106	99
									65	140	121	113	108	94	87
70	138	120	112	107	93	87									
75	136	119	112	106	92	86									
Cempanel®	5/16	48	No. 8 X 1.25" long X 0.323" HD ribbed bugle head screws	10" O.C. into furring only	2X4 wood or 20 ga. steel framing	16	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-38.8	0-15	164	149	135	127	115	105
									20	164	145	132	127	112	102
									25	164	141	130	127	110	100
									30	164	139	127	127	107	99
									35	161	136	126	124	106	97
									40	157	134	124	122	104	96
									45	155	133	123	120	103	95
									50	152	131	122	118	102	94
									55	151	130	121	117	101	94
									60	149	129	120	115	100	93
									65	131	114	-	102	88	-
70	130	113	-	101	88	-									
75	128	112	-	99	87	-									



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**Table 2, Wind Design Table (continued)**

Allowable Wind Speed (mph) for Cempanel Siding (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3)6

Product	Minimum Product Thickness (in.)	Width (in.)	Fastener Type	Fastener Spacing (in.)	Frame Type	Stud Spacing (in.)	Furring Type & Dimensions	Allowable Design Load (psf)	Building Height <sup>2,5</sup> (ft.)	2012 IBC <sup>7</sup> (Ultimate Design Wind Speed, $V_{ult}$ <sup>3</sup> )			2012 IRC 2009, 2006 IBC & IRC <sup>7</sup> (Basic Wind Speed, $V_{asd}$ <sup>4</sup> )		
										Wind exposure category			Wind exposure category		
										B	C	D	B	C	D
Cempanel®	5/16	48	No. 8 X 1.25" long X 0.323" HD ribbed bugle head screws	12" O.C. into furring only	2X4 wood or 20 ga. steel framing	16	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-35.4	0-15	157	142	129	121	110	100
									20	157	138	126	121	107	98
									25	157	135	124	121	105	96
									30	157	132	122	121	103	94
									35	153	130	120	119	101	93
									40	150	128	119	116	100	92
									45	148	127	117	115	98	91
									50	146	125	116	113	97	90
									55	144	124	115	111	96	89
									60	142	123	114	110	95	89
									65	125	-	-	97	-	-
70	124	-	-	96	-	-									
75	123	-	-	95	-	-									
Cempanel®	5/16	48	No. 8 X 1.25" long X 0.323" HD ribbed bugle head screws	8" O.C. into furring only	2X4 wood or 20 ga. steel framing	24	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-27.6	0-15	138	125	114	107	97	88
									20	138	122	111	107	94	86
									25	138	119	-	107	92	-
									30	138	117	-	107	91	-
									35	135	115	-	105	89	-
									40	133	113	-	103	88	-
									45	131	112	-	101	87	-
									50	129	111	-	100	86	-
									55	127	-	-	98	-	-
									60	125	-	-	97	-	-
									65	111	-	-	86	-	-
70	-	-	-	-	-	-									
75	-	-	-	-	-	-									
Cempanel®	5/16	48	0.090" shank X 0.215" HD x 1.5" long ring shank nail	6" O.C. into furring only	2X4 wood or 20 ga. steel framing	16	3/4" thick by 3.5" wide wood furring <sup>1,8,9</sup>	-49.2	0-15	185	168	152	143	130	118
									20	185	163	149	143	126	115
									25	185	159	146	143	123	113
									30	185	156	143	143	121	111
									35	181	154	142	140	119	110
									40	177	151	140	137	117	108
									45	174	150	138	135	116	107
									50	172	148	137	133	115	106
									55	170	147	136	131	114	105
									60	168	145	135	130	113	105
									65	148	129	120	115	100	93
70	146	128	119	113	99	92									
75	145	126	118	112	98	92									

- Furring attachment to structural members or alternative furring width shall be designed by the project engineer or reference to existing evaluation reports, for example [Dr.J's DRR No. 1303-04](#) or [FastenMaster's TER No. 1009-01](#).
- Building height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle  $\Theta$  less than or equal to  $10^\circ$  (2-12 roof slope).
- $V_{ult}$  = ultimate design wind speed.
- $V_{asd}$  = nominal design wind speed
- Linear interpolation of building height and wind speed is permitted.
- Wind speed design assumptions per Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3:  $K_d=1$ ,  $K_e=0.85$ ,  $G_C=-1.4$  ( $h \leq 60$ ),  $G_C=-1.8$  ( $h > 60$ ),  $G_{Cpi}=0.18$ .
- For 2009 IBC/IRC, 2006 IBC/IRC, Importance Factor,  $I = 1$ , was used for calculations.
- Wood furring shall be preservative treated per AWPA.
- Wood furring shall be specific gravity of 0.42 or greater per AFPA/NDS; or wood structural panel, conforming to DOC PS-1 or DOC PS-2 or APA PRP-108.