

TECHNICAL DATA SHEET

Hardie® Architectural Panels

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

Document Scope

This document applies to the following Hardie® Architectural Panel- Fine Sand, Architectural Panel- Mounded Sand, Architectural Panel- Sea Grass. The use of this product is limited to buildings not exceeding 85 feet in height.

General Description

Hardie® Architectural Panels are non-combustible fiber-cement panel, manufactured by James Hardie Building Products Inc.

Product Dimensions

Thickness – 0.3125 inches Length – 96, 120, & 144 inches Width – 48 inches

Product Composition

Hardie® Architectural Panels are *Grade II, Type A*, fiber-cement sheets as defined by ASTM C 1186. The panels are manufactured by the Hatschek process and cured by high pressure steam autoclaving.

Code Compliance

Hardie® Architectural Panels complies with:

- The 2009, 2012, and 2015 *International Building Code® (IBC) Section 1404.10*, 2018 and 2021 *International Building Code® (IBC) Section 1403.10 and 2009, 2012, 2015, 2018, and 2021 International Residential Code® (IRC) Table R703.3(1) and Section R703.10.1 as ASTM C 1186 Grade II, Type A Fiber Cement*.
- The 2017 and 2020 *Florida Building Code® (FBC) Section 1404.10 and 1405.16 as ASTM C 1186 Grade II, Type A Fiber Cement*.

Wind Design:

- Design Tables 2 & 3 provide allowable capacity in mph for transverse load conditions for the Hardie® Architectural Panels attached to either wood framing, furring or WSP, tested in accordance to ASTM E 330.
- Wood framing shall have a specific gravity of 0.42 or greater unless otherwise stated.
- Wood Structural Sheathing (WSP) panel must have a specific gravity of 0.50 or higher unless otherwise stated.

Fire Characteristics:

- Hardie® Architectural Panels are classified as non-combustible when tested in accordance with ASTM E136.
- Hardie® Architectural Panels may be used in ASTM E119 fire resistance rated assemblies as listed by Warnock Hersey.
- Hardie® Architectural Panels are a Class A material according to 2017 and 2020 *FBC*, 2018 and 2021 *IBC Section 803.1.2; Surface Burning Characteristics* when tested in accordance with ASTM E 84: Flame Spread Index = 0 and Smoke Developed Index = 0.
- The building official reserves the right to approve alternate materials, design and methods of construction based on research reports and/or tests based on 2018 *IBC*, 2017 & 2020 *FBC Section 104.11*.

Installation Requirements

- Test reports can be furnished to the building official upon request, contact your local James Hardie sales representative.
- Hardie® Architectural Panels shall be installed on exterior walls braced in accordance with the applicable building code.
- A water-resistive barrier complying with *Section R703.2 of the IRC or Section 1403.2 of the FBC* is required to be installed.
- Install the Hardie® Architectural Panels in accordance with this report and the James Hardie published installation requirements. For a copy contact your local James Hardie sales representative or visit www.JamesHardiePros.com.

Table 1, Hardie® Architectural Panels ASTM C 1186 Physical Properties and Supplementary Requirements

	ASTM Test Method	General Property	Unit or Characteristic	Requirement	Result
Physical Attributes	ASTM C1185	Dimensional Tolerances	Length	± 0.5% or ±1/4in	Pass
			Width	± 0.5% or ±1/4in	
			Thickness	± 0.04 in	
			Squareness	<1/32 in/ft of length	
			Edge Straightness	<1/32 in/ft of length	
Durability	ASTM C1185	Density, lb./ft ³		As reported	<83
	ASTM C1185	Water Tightness	Physical Observations	No drop formation	Pass
	ASTM C1185	Flexural Strength	Wet conditioned, psi	>1015 psi	Pass
			Equilibrium conditioned, psi	>1450 psi	
	ASTM C1185	Warm Water Resistance, Observations	Physical Observations	No visible cracks or structural alteration	Pass
Fire Characteristics	ASTM C1185	Heat/Rain Resistance	Physical Observations	No visible cracks or structural alteration	Pass
	ASTM C1185	Freeze/Thaw Resistance	Physical Observations Mass Loss, %	No visible cracks or structural alteration ≤ 3.0%	Pass
			Freeze/Thaw, % strength retention	≥ 80%	
Fire Characteristics	ASTM E84	Surface Burning Characteristics	Flame Spread Index (FSI) Smoke Developed Index (SDI) Fuel Contributed International Building Code®	As reported	0 0 0 A
	ASTM E136	Non-combustibility		As reported	Pass



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Table 2, Wind Design Table, Exposed Fastening
Allowable Wind Speed (mph) for Hardie® Architectural Panels (Analytical Method in ASCE 7-10, 7-16 Chapter 30)

Product ¹	Minimum Thickness (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design load (psf)	Building Height (ft.) ^{2,3}	2017 & 2020 FBC, 2012 & 2015 IBC, 2015 & 2018 IRC (Ultimate Design Wind Speed, V _{ult}), 5, 9 2018 IBC (Basic Design Wind Speed, V) ¹¹			2006, 2009 & 2012 IRC 2006 & 2009 IBC (Nominal Design Wind Speed, V _{asd}) ^{4,10,12,13}		
								Wind exposure category			Wind exposure category		
								B	C	D	B	C	D
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1 1/2" long, stainless Finish Nail	4 inches along studs	2X4 wood ⁶	16	33.8	0-15	153	139	126	119	108	98
							20	153	135	123	119	105	95
							40	147	126	116	114	97	90
							60	139	120	112	108	93	87
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1 1/2" long, stainless Finish Nail	4 inches along studs	2X4 wood ⁷	16	37.0	0-15	160	145	132	124	113	102
							20	160	141	129	124	109	100
							40	154	131	121	119	102	94
							60	145	126	117	113	98	91
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1.25" long, stainless Finish Nail	4 inches o.c. vertically into furring only	2x4 wood or 20 ga. (33 mils) steel framing with 3/4" thick by 3.5" wide WSP furring (SG=0.50) ¹⁴	16	27.7	0-15	139	126	114	107	97	89
							20	139	122	112	107	95	86
							40	133	114	105	103	88	81
							60	126	109	101	97	85	78
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1.25" long, stainless Finish Nail	4 inches o.c. vertically into furring only	2x4 wood or 20 ga. (33 mils) steel framing with 3/4" by 3.5" wide SPF furring (SG=0.42) ¹⁴	16	21.4	0-15	122	110	100	94	85	78
							20	122	107	-	94	83	-
							40	117	-	-	90	-	-
							60	110	-	-	85	-	-

1. Installation must be in accordance with manufacturer's installation instructions

2. Building heights are the mean roof height (ft) of a building except the eave height shall be used for the roof angles of less than or equal to 10° (2-12 roof slope)

3. Linear interpolation of building height (≤ 60ft) and wind speed is permitted.

4. Wind speed design coefficient assumptions per Analytical Method in ASCE 7-05: I=1, K_{zt}=1, K_d=0.85, G_{Cp}=-1.4, G_{Cpi}=-0.18

5. Wind speed design assumptions per Analytical Method in ASCE 7-10 & ACE 7-16 Section 30.4: K_{zt}=1, K_d=0.85, G_{Cp}=-1.4, G_{Cpi}=0.18

6. Wood framing species must have a specific gravity of 0.42 gravity or higher.

7. Wood framing species must have a specific gravity of 0.46 gravity or higher.

8. Wood Structural Sheathing panel must have a specific gravity of 0.50 or higher.

9. V_{ult} = ultimate design wind speed.

10. V_{asd} = nominal design wind speed.

11. V = basic design wind speed

12. Basic Design Wind Speed per ASCE 7-16 or 2017 FBC/2018 IBC Figures 1609.3(1) through 1609.3(8). Where design is based on the fastest mile wind speeds, the basic wind speed shall be converted to the fastest mile wind speed V_{fm} per Section R301.2.1.3 of the 2012 IRC.

13. 2017 & 2020 FBC, 2018 IBC Section 1609.3.1 Eq. 16-33, V_{asd} = V_{ult} (0.6)^{0.5}

14. The NDS published specific gravities of SPF lumber & Wood Structural Panel (WSP) furring are 0.42 and 0.50 respectively. Attachment of the furring to the structural framing must be determine by the project design engineer to resist the allowable design wind loads for the maximum wind speeds as tabulated.



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Table 3, Wind Design Table, Off-Stud Nailing Application
Allowable Wind Speed (mph) for Hardie® Textured Panels (Analytical Method in ASCE 7-10, 7-16 Chapter 30)

								2017 & 2020 FBC, 2012 & 2015 IBC, 2015 & 2018 IRC (Ultimate Design Wind Speed, V _{ult}), 5, 9 2018 IBC (Basic Design Wind Speed, V) ¹¹			2006, 2009 & 2012 IRC 2006 & 2009 IBC (Nominal Design Wind Speed, V _{asd}) ^{4,10,12,13}		
								Wind exposure category			Wind exposure category		
Product ¹	Minimum Thickness (in.)	Fastener Type	Fastener Spacing	Frame Type	Stud Spacing (in.)	Allowable Design load (psf)	Building Height (ft.) ^{2,3}	B	C	D	B	C	D
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1 1/2" long, stainless Finish Nail	4 inches along studs & panel edges. See figure 1	2X4 wood ⁷ with min 7/16" Wood Structural Panel ⁹ Sheathing attached per code	16	42.7	0-15	172	156	142	133	121	110
							20	172	152	138	133	117	107
							40	165	141	130	128	109	101
							60	156	135	126	121	105	97
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1 1/2" long, stainless Finish Nail	4 inches along studs & panel edges. See figure 2	2X4 wood ⁸ with min 7/16" Wood Structural Panel ⁹ Sheathing attached per Code	24	31.2	0-15	147	133	121	114	103	94
							20	147	130	118	114	100	92
							40	141	121	111	109	93	86
							60	133	116	-	103	90	-
Hardie® Architectural Panel ¹	5/16	16 Gauge, 1 1/2" long, stainless Finish Nail	4 inches along studs & panel edges. See figure 2	2X4 wood ⁷ with min 7/16" Wood Structural Panel ⁹ Sheathing attached per code	24	28.0	0-15	139	126	115	108	98	89
							20	139	123	112	108	95	87
							40	134	114	-	104	89	-
							60	126	-	-	98	-	-

1. Applies to Hardie® Architectural Panel – Fine Sand, Hardie® Architectural Panel – Mounded Sand, Hardie® Architectural Panel – Sea Grass, Hardie® Architectural Panel – Sculpted Clay only.

2. Installation must be in accordance with manufacturer's installation instructions.

3. Building heights are the mean roof height (ft) of a building except the eave height shall be used for the roof angles of less than or equal to 10° (2-12 roof slope).

4. Linear interpolation of building height (≤ 60ft) and wind speed is permitted.

5. Wind speed design coefficient assumptions per Analytical Method in ASCE 7-05: I=1, Kzt=1, Kd=0.85, GCp= -1.4, GCpi= -0.18.

6. Wind speed design assumptions per Analytical Method in ASCE 7-10 & ACE 7-16 Section 30.4: Kzt=1, Kd=0.85, GCp= -1.4, GCpi= 0.18.

7. Wood framing species must have a specific gravity of 0.42 gravity or higher.

8. Wood framing species must have a specific gravity of 0.46 gravity or higher.

9. Wood Structural Sheathing panel must have a specific gravity of 0.50 or higher.

10. V_{ult} = ultimate design wind speed.

11. V_{asd} = nominal design wind speed.

12. V = basic design wind speed.

13. Basic Design Wind Speed per ASCE 7-16 or 2017 FBC/2018 IBC Figures 1609.3(1) through 1609.3(8). Where design is based on the fastest mile wind speeds, the basic wind speed shall be converted to the fastest mile wind speed V_{fm} per Section R301.2.1.3 of the 2012 IRC.

14. 2017 & 2020 FBC, 2018 IBC Section 1609.3.1 Eq. 16-33, V_{asd} = V_{ult}(0.6)0.5



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Figure 1, Fastening Configuration for 16" O.C. Wood Frame: Off-Stud Application

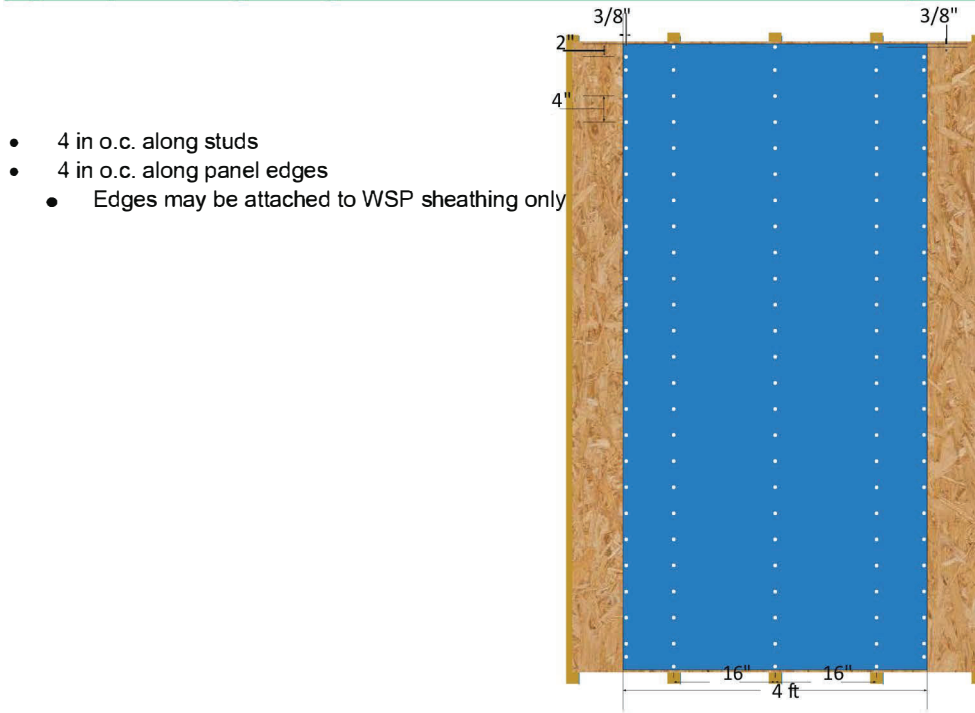


Figure 2, Fastening Configuration for 24" O.C. Wood Frame: Off-Stud Application

