

Beyond™ Panel

Technical Data Sheet



DOCUMENT SCOPE

This document applies to the Beyond Panel, a fiber cement panel mechanically attached to rainscreen furring systems on buildings ≤ 85 feet.

GENERAL DESCRIPTION

Noncombustible fiber cement panel manufactured by Plycem USA LLC, sold under the Allura brand.

PRODUCT DIMENSIONS

Thickness: 7/16-in. (11mm) **Width:** 47 1/2-in. (1206mm) **Length:** 95 1/2-in. (2425mm) & 119 1/2-in. (3035mm)

MATERIAL DESCRIPTION

The Beyond™ Panel is a Grade II Type A fiber cement panel that complies with the physical property criteria defined in ASTM C-1186 (ASTM C-1185). The panel is manufactured on Hatschek machinery and cured with pressurized steam.

CODE COMPLIANCE

General Compliance:

- ◆ The Beyond™ Panel is defined under ASTM C 1186 as Grade II Type A (ISO 8336, Category A, Class II).
- ◆ Complies with all commercial and residential building codes for use as an exterior siding product.
- ◆ Complies with Section 1404.10 of the IBC (2006 – 2015).
- ◆ Complies with Section R703.10.1 and Table R703.4 of the IRC (2006 – 2015).
- ◆ Use is limited to allowable wind pressures in the Windload tables published in this document.
- ◆ Non-Combustible fiber cement panel, as detailed in the fire resistance characteristics published in Table 1 of this document.

Fire Resistance:

- ◆ The Beyond™ Panel is non-combustible when tested in accordance with ASTM E136.
- ◆ Beyond™ Panels may be used in fire resistant rated assemblies listed under ASTM E119 rated assemblies that can be incorporated into both 60 -minute and 120-minute designs.
- ◆ The Beyond™ Panel is a Class 'A' siding material, as defined in the 2006-2015 International Building Code (IBC); Section 803.1.1: Surface Burning Characteristics; ASTM E-84: Flame Spread Index = 0 Smoke Developed ≤ 5
- ◆ Test reports are available to the building official upon request.
- ◆ For additional information of current assemblies contact the Allura Technical Services at 281-742-6846.

Wind Design:

- ◆ Beyond™ Panels have been tested for wind resistance in a variety of configurations for application over both wood and steel framing in compliance with the ASTM E-330. Framing and furring spacing shall not exceed 24-in. OC.
- ◆ Securement of Panels must conform with Windload tables 2 and 3 in this document for both zone 4 and zone 5.
- ◆ Applications must use the fastener listed within the windload tables. The use of an alternate fastener/nail may result in lesser wind load resistance and may void the warranty.
- ◆ All wood furring used to secure the Beyond™ Panels must have a specific gravity of 0.42 or greater.
- ◆ All steel framing, Z-furring and hat channels used to secure siding must be minimum G-60 galvanized; 20ga; 33ksi or greater.

The wind load performance of the Beyond™ Panels is dependent on proper securement of the wood or metal furring to the framing. The furring must be adequately attached to the framing to resist the calculated wind loads exerted on the panel plus an industry standard margin of safety. The structural engineer of record shall calculate the wind loads and specify the appropriate fastener type, diameter and spacing for wood and steel furring. Fastener withdrawal resistance data is typically published by fastener manufacturers in Technical Data Sheets for common framing members. Data typically includes embedment and penetration requirements to achieve the published values. Failure of the furring attachment to framing shall not be considered a failure of the Beyond™ Panels.

INSTALLATION REQUIREMENTS

- ◆ Beyond™ panels shall be installed with approved accessories on wood and steel rainscreen furring, with a minimum 20 mil non-permeable membrane covering the face of all wood furring. A minimum 3/4-in. vented cavity shall be constructed behind the Beyond™ Panel.
- ◆ Beyond™ Panels shall be installed onto a rigid, braced frame in accordance with local building code requirements and the Beyond™ Panel published installation instructions.
- ◆ Panels shall be applied over WRB and integrated flashing system that is durable and complete to protect the exterior walls and building interior as required by local building code and project specifications.
- ◆ Fasteners must be corrosion resistant. The designer of record shall specify a material type and/or coating that will remain corrosion resistant within the environment placed for the duration of the warranty.
- ◆ When panels are cut down from original manufactured size, wind rating is maintained by maintaining fastener configuration. Minimum of four fasteners per panel are required placed a minimum of 4-in. from panel edges.
- ◆ Install the Beyond Panels in accordance with this document, the published installation manual and all applicable technical bulletins.

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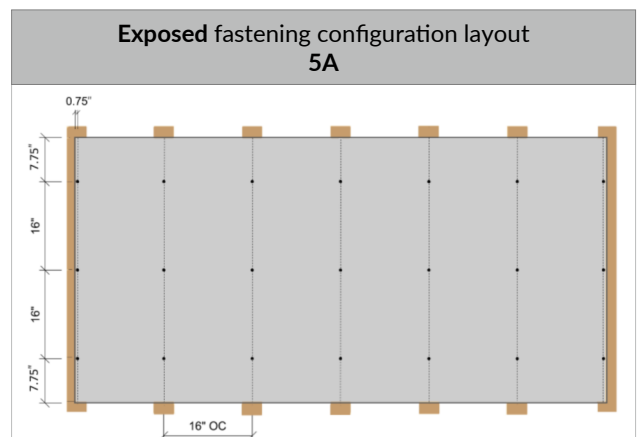
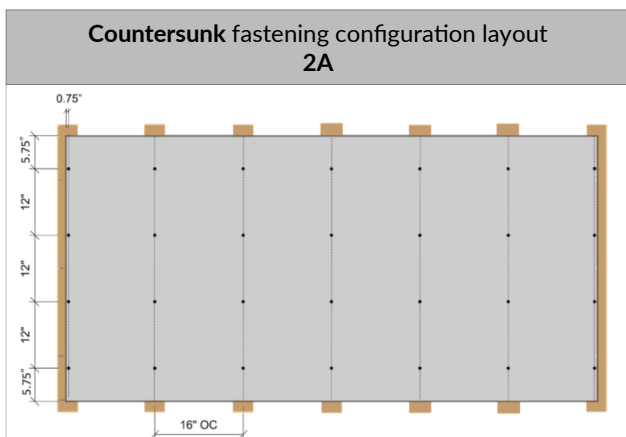
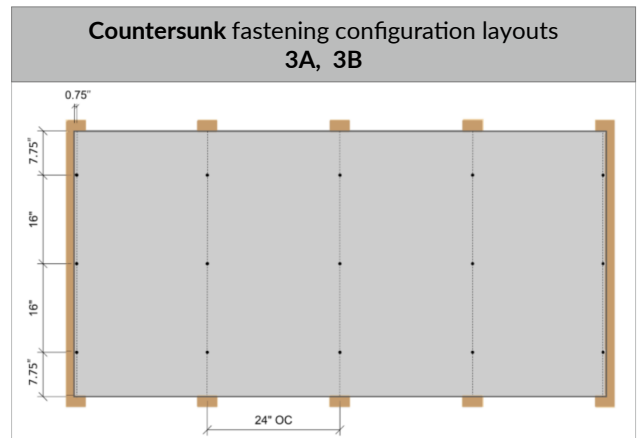
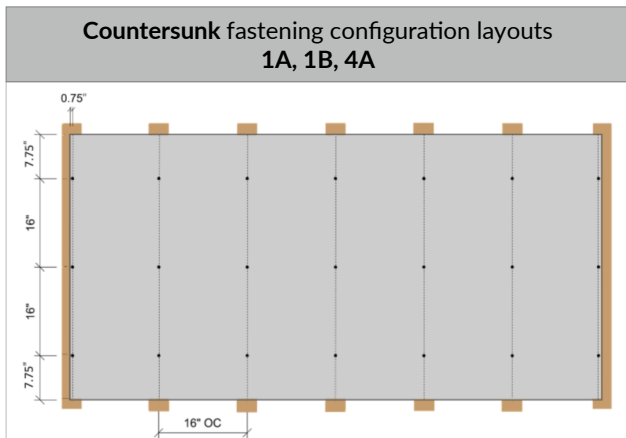
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TABLE 1: PHYSICAL PROPERTIES TABLE

	ASTM Test Method	General Property	Unit or Characteristic	Requirement	Result	
Physical Attributes	ASTM C1185	Dimensional Tolerances	Length	± 0.5% or ± 1/4-in.	Pass	
			Width	± 0.5% or ± 1/4-in.		
			Thickness	± 0.04 in.		
			Squareness	<1/32-in./ft. of length		
			Edge Straightness	<1/32-in./ft. of length		
ASTM C1185	Density, lb/ft ³		As reported	≤75		
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	Pass		
Durability	ASTM C1185	Warm Water Resistance, Observations	Physical Observations	No visible cracks or structural alteration	Pass	
	ASTM C1185	Heat/Rain Resistance	Physical Observations	No visible cracks or structural alteration	Pass	
	ASTM C1185	Freeze/Thaw Resistance	Physical Observations	No visible cracks or structural alteration	Pass	
			Mass Loss, %	≤ 3.0%		
		Freeze/Thaw, % strength retention	≥ 80%			
ASTM G23	UV Accelerated Weathering Test	Physical Observations	No cracking, checking, or crazing	Pass		
Fire Characteristics	ASTM E84	Surface Burning Characteristics	Flame Spread Index (FSI)		0	
			Smoke Developed Index (SDI)		≤5	
			Fuel Contributed		0	
				NFPA Class	As Reported	A
				Uniform Building Code Class		1
				International Building Code® class		A
ASTM E136	Noncombustibility	Noncombustible			Pass	

COUNTERSUNK AND EXPOSED FASTENING CONFIGURATION LAYOUTS



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TABLE 2: WINDLOADING TABLE FOR COUNTERSUNK FASTENING

Allowable Wind Speed (mph) for Beyond Panel (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 & Part 3) ⁶										Ultimate Design Wind Speed (V_{ult}) ³			Basic Wind Speed (V_{asd}) ⁴		
Thickness (inches)	Width (inches)	Frame Type	Furring	Frame Spacing (inches)	Fastener Layout	Fastener Type	Allowable Design Pressure (psf)	Building Height ^{2,5} (feet)	Wind Exposure			Wind Exposure			
									B	C	D	B	C	D	
7/16	47.5	2x4 Wood (SPF)	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	16	Configuration 1A (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	#8 x 1-5/8" long Waferhead Screw 0.390" Head ¹ , Countersunk 1-1.5mm below panel surface	30.7	15	146	132	120	113	102	93	
								20	146	128	117	113	99	91	
								30	146	123	113	113	95	88	
								40	140	119	110	108	93	85	
								60	132	115	109	102	89	82	
								65	116	103	97	90	79	73	
								70	115	102	97	89	75	73	
								75	114	101	96	88	74	72	
								80	113	100	95	87	73	72	
								85	112	100	95	87	73	71	
7/16	47.5	2x4 Wood (SPF)	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	16	Configuration 1B (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	1.5" long Beyond Screw 0.30" Head ¹ , Countersunk 1-1.5mm below panel surface	38.0	15	162	147	134	126	114	104	
								20	162	143	131	126	111	101	
								30	162	137	126	126	106	98	
								40	156	133	123	121	103	95	
								60	147	128	119	114	99	92	
								65	129	115	106	100	88	82	
								70	128	114	106	99	87	82	
								75	127	112	105	98	86	81	
								80	126	111	105	97	85	81	
								85	125	111	105	96	85	80	
7/16	47.5	Minimum 20 Gauge Steel	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	16	Configuration 4A (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	#8 x 1-5/8" long Waferhead Screw 0.390" Head ¹ , Countersunk 1-1.5mm below panel surface	35.3	15	156	142	129	121	110	100	
								20	156	138	126	121	107	98	
								30	156	132	121	121	102	94	
								40	150	128	118	116	99	92	
								60	142	123	114	110	95	89	
								65	125	110	102	96	87	79	
								70	124	109	102	95	83	79	
								75	123	108	101	94	82	78	
								80	122	107	101	93	81	78	
								85	121	107	101	92	81	77	
7/16	47.5	2x4 Wood (SPF)	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	16	Configuration 2A (Countersunk Fasteners) 4 screws, one measuring 6" from each panel edge and two equidistant of panel edge in center	#8 x 1-5/8" long Waferhead Screw 0.390" Head ¹ , Countersunk 1-1.5mm below panel surface	36.3	15	157	142	129	121	110	100	
								20	157	138	126	121	107	98	
								30	157	132	122	121	103	94	
								40	150	128	119	116	100	92	
								60	142	123	114	110	95	89	
								65	125	110	101	97	84	79	
								70	124	109	101	96	83	79	
								75	122	108	100	95	82	78	
								80	121	107	99	94	81	78	
								85	120	106	99	93	81	77	

- Screws shall penetrate at least 3 full threads when attaching to metal furring.
- Building Height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (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: $K_{zt}=1$, $K_d=0.85$, $GC_p=-1.4$ ($h \leq 60$), $GC_p=-1.8$ ($h > 60$), $GC_{pi}=0.18$.
- Wood furring is preservative treated per AWPAs.
- Wood furring is 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.

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TABLE 2: WINDLOADING TABLE FOR COUNTERSUNK FASTENING (CONTINUED)

Allowable Wind Speed (mph) for Beyond Panel (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 & Part 3) ⁶										Ultimate Design Wind Speed (V_{ult}) ³			Basic Wind Speed (V_{asd}) ⁴		
Thickness (inches)	Width (inches)	Frame Type	Furring	Frame Spacing (inches)	Fastener Layout	Fastener Type	Allowable Design Pressure (psf)	Building Height ^{2,5} (feet)	Wind Exposure			Wind Exposure			
									B	C	D	B	C	D	
7/16	47.5	2x4 Wood (SPF)	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	24	Configuration 3A (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	#8 x 1-5/8" long Waferhead Screw 0.390" Head ¹ , Countersunk 1-1.5mm below panel surface	24.3	15	130	118	107	100	91	83	
								20	130	114	104	100	89	81	
								30	130	110	101	100	85	78	
								40	124	106	98	96	82	76	
								60	118	102	95	91	79	73	
								65							
								70							
								75							
								80							
85															
7/16	47.5	Minimum 20 Gauge Steel	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	24	Configuration 3B (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	#8 x 1-5/8" long Waferhead Screw 0.390" Head ¹ , Countersunk 1-1.5mm below panel surface	23.7	15	128	116	106	99	90	82	
								20	128	113	103	99	88	80	
								30	128	108	100	99	84	77	
								40	123	105	97	95	81	75	
								60	116	101	94	90	78	73	
								65	102	90	84	79	69	65	
								70	101	90	84	78	68	65	
								75	100	89	83	77	68	64	
								80	99	88	83	77	67	64	
85	98	88	83	76	67	63									

1. Screws shall penetrate at least 3 full threads when attaching to metal furring.
2. Building Height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
3. V_{ult} = ultimate design wind speed.
4. V_{asd} = nominal design wind speed.
5. Linear interpolation of building height and wind speed is permitted.
6. Wind speed design assumptions per Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3: $K_{zt}=1$, $K_d=0.85$, $G_C=-1.4$ ($h \leq 60$), $G_C=-1.8$ ($h > 60$), $G_{Cp}=0.18$.
7. Wood furring is preservative treated per AWPA.
8. Wood furring is 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.

TABLE 3: WINDLOADING TABLE FOR EXPOSED FASTENING

Allowable Wind Speed (mph) for Beyond Panel (Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 & Part 3) ⁶										Ultimate Design Wind Speed (V_{ult}) ³			Basic Wind Speed (V_{asd}) ⁴		
Thickness (inches)	Width (inches)	Frame Type	Furring	Frame Spacing (inches)	Fastener Layout	Fastener Type	Allowable Design Pressure (psf)	Building Height ^{2,5} (feet)	Wind Exposure			Wind Exposure			
									B	C	D	B	C	D	
7/16	47.5	2x4 Wood	MINIMUMS Wood ^{7,8} : 3/4" thick x 4" wide Steel: 20 Gauge; 33 ksi	16	Configuration 5A (Countersunk Fasteners) 3 screws, one measuring 8" from each panel edge and one equidistant of panel edge in center	#10-12 x 1 3/16" long x 0.473" HD Trusshead Screw ¹	36.7	15	159	145	131	123	112	102	
								20	159	141	128	123	109	99	
								30	159	135	124	123	104	96	
								40	153	131	121	119	101	94	
								60	145	125	117	112	97	90	
								65	127	112	104	98	86	80	
								70	126	111	104	97	85	80	
								75	125	110	103	96	84	79	
								80	124	109	103	95	83	79	
85	123	109	103	94	83	78									

1. Screws shall penetrate at least 3 full threads when attaching to metal furring.
2. Building Height = mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
3. V_{ult} = ultimate design wind speed.
4. V_{asd} = nominal design wind speed.
5. Linear interpolation of building height and wind speed is permitted.
6. Wind speed design assumptions per Analytical Method in ASCE 7-10 Chapter 30 C&C Part 1 and Part 3: $K_{zt}=1$, $K_d=0.85$, $G_C=-1.4$ ($h \leq 60$), $G_C=-1.8$ ($h > 60$), $G_{Cp}=0.18$.
7. Wood furring is preservative treated per AWPA.
8. Wood furring is 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.