

Technical Data

To make the lives of designers and engineers easier we are providing the structural data for our Structural Insulated Panels.

The data below can be applied according to the rules laid out by the NTA in the [SIP Engineering Design Guide](#). If you have any questions about how to apply the data to your project please contact us. Our technical department has years of experience working with SIPs and adapting the data to the different structural properties of our other types of panels. The Structural data below reflects that assessment of Structural Insulated SIPs with EPS cores by NTA.

Download our NTA Code Listing

[NTA Code Listing](#)

Download our Complete SIP Construction Guidebook

[SIP Guidebook](#) [Timber Frame Guidebook](#)

Foard Panel Inc. Standard Submittal Sheets

Structural Panel [pdf](#) Drywall Clad [pdf](#) T&G Clad [pdf](#) Nailbase [pdf](#)

Foard Panel Inc. Warranty

Sample Warranty, contact us for project specific version [pdf](#)



[Click Here to learn more about NTA.](#)

R-Values

One of the greatest benefits of SIP construction is the decreased thermal bridging when compared to conventional stick framed walls. The R-value given on insulation materials is a center of cavity number it tells you how good the insulation is, however in most structures the studs are placed 16" on center and windows are double framed.

Panel Thickness	EPS	NEO	XPS	PIR
Foam only 1"	R-3.8	R-4.7	R-5	R-5.7
4.5"	R-15	R-18	R-19	R-23
6.5"	R-23	R-27	R-29	R-34

Panel Thickness	EPS	NEO	XPS	PIR
8.25"	R-29	R-36	R-37	R-44
10.25"	R-37	R-45	R-47	R-56
12.25"	R-45	R-54	R-57	R-67
15"	R-55	R-67	-	-
16"	R-59	R-72	-	-

R-Values of Standard SIP Sizes

Around 18%-35% of the conventional wall doesn't have any insulation, just wood (or worse, metal studs) as thermal bridging. SIPs in comparison have about 5%-20% thermal bridging mostly around windows and doors. SIPs can give you better performance from thinner wall profiles.

Wall Thickness		Fiberglass	Cellulose	EPS SIP	NEO SIP	XPS SIP	PIR SIP
4.5"	Center of Cavity	R-11	R-13	R-15	R-18	R-19	R-23
	Whole Wall	R-9	R-9	R-13	R-15	R-16	R-18
6.5"	Center of Cavity	R-17	R-20	R-23	R-27	R-29	R-34
	Whole Wall	R-13	R-14	R-20	R-22	R-24	R-27
8.25"	Center of Cavity	R-23	R-26	R-29	R-36	R-37	R-44
	Whole Wall	R-17	R-18	R-25	R-28	R-31	R-35
10.25"	Center of Cavity	R-29	R-33	R-37	R-45	R-47	R-56
	Whole Wall	R-21	R-23	R-32	R-36	R-38	R-43

Wall Thickness		Fiberglass	Cellulose	EPS SIP	NEO SIP	XPS SIP	PIR SIP
12.25"	Center of Cavity	R-35	R-40	R-45	R-54	R-57	R-67
	Whole Wall	R-26	R-28	R-38	R-44	R-46	R-52

R-Value Comparison Table Foard Panel SIP vs. Conventional Stick Built

Properties	Units	Weak-Axis Bending	Strong-Axis Bending
Allowable Tensile Stress	Ft (psi)	245	495
Allowable Compressive Stress	Fc (psi)	340	580
Elastic Modulus (Bending)	Eb (psi)	738900	658800
Shear Modulus	G (psi)	207	405
Allowable Core Shear Stress	Fv (psi)	4.5	5.0
Core Compressive Modulus	Ec (psi)	360	360
Reference Depth	ho (in.)	4.625	4.625
Shear Depth Factor Exponent	m	0.084	0.086

Basic Properties of EPS SIP From our NTA Code Listing

Properties	Units	4.625"	6.50"	8.25"	10.25"	12.25"
Core Thickness	c (in.)	3.75	5.625	7.375	9.375	11.375
Dead Weight	W _d (psf)	3.2	3.3	3.5	3.6	3.8
Facing Area	A _r (in. ² /ft)	10.5	10.5	10.5	10.5	10.5
Shear Area	A _v (in. ² /ft)	50.3	72.8	93.8	117.8	141.8
Moment of Inertia	I (in. ⁴ /ft)	46.0	96.5	160.2	252.7	366.3

Properties	Units	4.625"	6.50"	8.25"	10.25"	12.25"
Section Modulus	S (in. ³ /ft)	19.9	29.7	38.8	49.3	59.8
Radius of Gyration	r (in.)	2.09	3.03	3.91	–	–
Centroid-to-Facing	Y _c (in.)	2.31	3.25	4.13	–	–

Section Properties of EPS SIP From NTA Code Listing

Panel Length	(ft)	8'WAB	8'	10'	12'	14'	16'	18'	20'
Thickness	Deflection Limits								
4.5"	L/180	50.8	68.8	45.1	30.8	21.7	–	–	–
	L/240	40.9	51.6	33.8	23.1	16.3	–	–	–
	L/360	27.3	34.4	22.5	15.4	–	–	–	–
6.5"	L/180	73.8	80.6	62.0	50.4	39.6	29.4	22.4	–
	L/240	64.7	80.6	57.9	40.9	29.7	22.1	16.8	–
	L/360	43.1	56.6	38.6	27.3	19.8	14.7	–	–
8.25"	L/180	81.4	88.5	67.4	54.4	45.6	39.3	34.1	26.7
	L/240	81.4	88.5	67.4	54.4	43.9	33.2	25.6	20.0
	L/360	58.3	78.4	54.8	39.6	29.3	22.1	17.1	13.4
10.25"	L/180	89.9	97.3	73.1	58.6	48.8	41.9	36.7	32.6
	L/240	89.9	97.3	73.1	58.6	48.8	41.9	36.7	29.2
	L/360	75.9	97.3	73.1	54.6	41.1	31.5	24.6	19.5
12.25"	L/180	98.6	106.4	78.8	62.5	51.9	44.3	38.7	34.3
	L/240	98.6	106.4	78.8	62.5	51.9	44.3	38.7	34.3
	L/360	93.6	106.4	78.8	62.5	51.9	41.7	32.9	26.3

Panel Length	(ft)	8'WAB	8'	10'	12'	14'	16'	18'	20'
---------------------	-------------	--------------	-----------	------------	------------	------------	------------	------------	------------

Allowable Transverse Loads(psf) for EPS SIP with Surface Splines from NTA Code Listing

Lateral Bracing(ft)	8'WAB	8'	10'	12'	14'	16'	18'	20'
4.5"	2320	3630	3260	2810	-	-	-	-
6.5"	2470	4070	3890	3660	3390	3090	2790	-
8.25"	2530	4240	4130	4000	3830	3640	3430	3190

Allowable Axial Loads(plf) for EPS SIP from NTA Code Listing