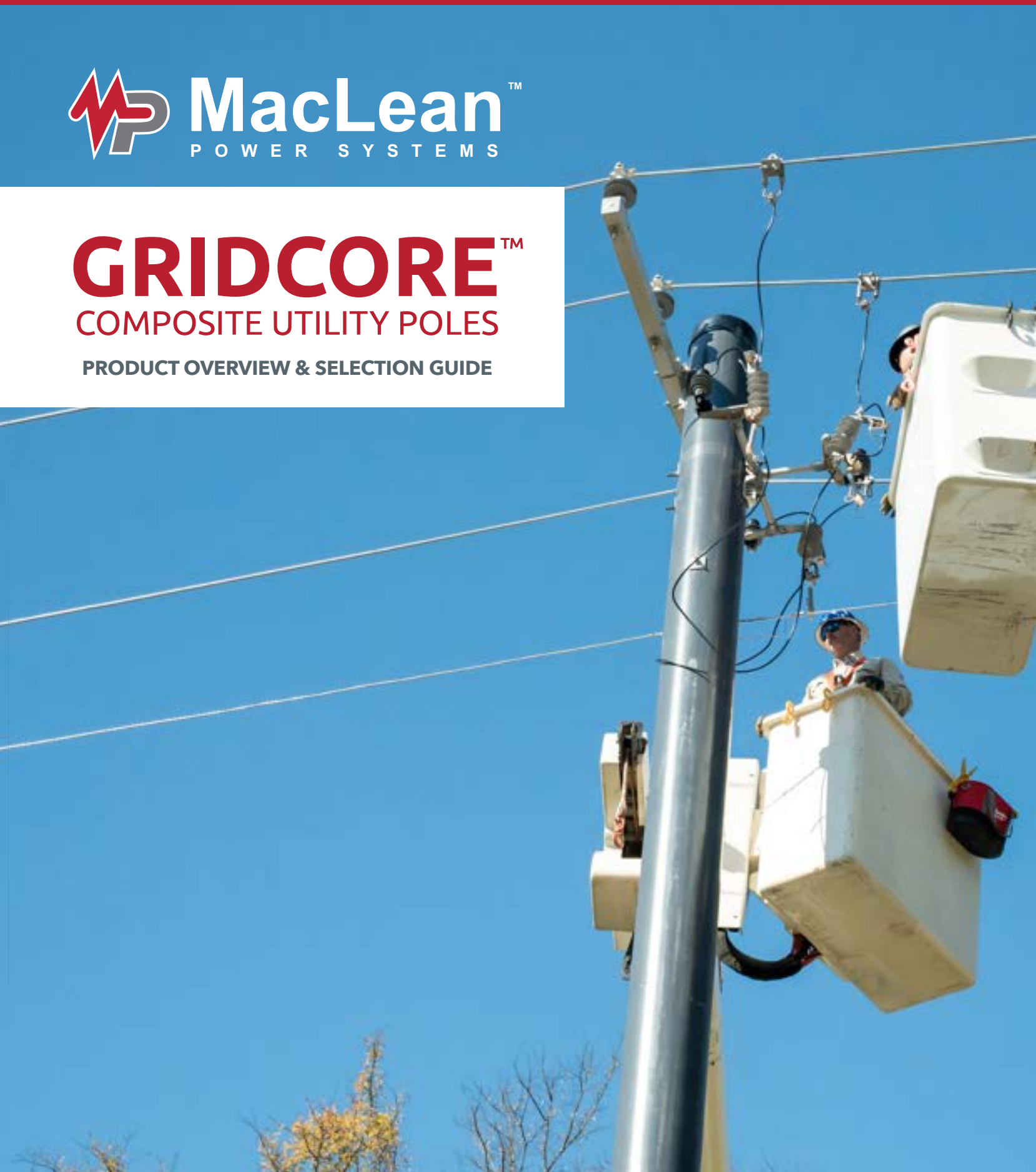
MacLean™
POWER SYSTEMS

GRIDCORE™
COMPOSITE UTILITY POLES

PRODUCT OVERVIEW & SELECTION GUIDE



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INTRODUCING GridCore™™ COMPOSITE UTILITY POLES FOR ELECTRIC POWER DISTRIBUTION

GridCore™™ Composite Utility poles are engineered to enhance grid resilience as a superior alternative to wood, steel, or concrete poles. Compared to traditional materials, fiber reinforced polymer (FRP) composites are more durable, require less maintenance, and provide a longer service life. They are also significantly lighter in weight, allowing for safer and simplified installation.

KEY PERFORMANCE ADVANTAGES

LOWER TOTAL SYSTEM AND LIFECYCLE COST

GridCore™™ Composite Poles have an expected service life of up to 80 years, compared to 30-40 years for wood poles. Considering the cost of replacing aged, damaged, and failed poles, the longer lifespan of an FRP pole results in total cost savings over the life of the pole.

LOWER MAINTENANCE AND RESISTANT TO PESTS

Also contributing to lower lifecycle cost, composite poles require only visual inspection and are not susceptible to damage from woodpeckers and insects, reducing maintenance and repair costs. Superficial damage can often be repaired on-site, using recommended products and procedures available from MacLean Power.

CUSTOMIZED AND CONSISTENT MATERIAL

Manufactured in a continuous pultrusion process, GridCore™™ poles are engineered for consistent strength and uniform appearance and are not subject to warping, shrinkage, or splintering. Unlike wood they can withstand strong storms without breaking.

LIGHTWEIGHT AND SAFER INSTALLATION

GridCore™™ poles are significantly lighter than equivalent wood and concrete poles and can be installed using light-duty equipment and without expensive cranes. The lower weight can reduce the opportunity for worker injuries and strain on equipment. The poles have excellent dielectric strength that allows for safer installation near energized lines.

NO ASSEMBLY REQUIRED

GridCore™™ pultruded composite poles are fully fabricated as one-piece, uniform diameter, requiring only one size through-bolt length, saving assembly labor in the field, and reducing outage time.

SIMPLE TO DRILL

GridCore™™ poles can be purchased pre-drilled, and they can easily be field drilled using a handheld cordless drill and recommended bits.

POLE SELECTION GUIDE

LENGTH (FT)	CLASS	CATALOG NUMBER, UNDRILLED	DIAMETER (IN)	WEIGHT (LBS)	WEIGHT (CLASS B SYP)	DEFLECTION FOR RATING (IN)	DEFLECTION (CLASS B SYP)
40	C4	X34B-DG-40C4	14	707	1160	13	38
	C3	X34B-DG-40C3	14	707	1360	17	35
	C2	X34B-DG-40C2	14	707	1580	21	32
	C1	X34B-DG-40C1	14	707	1810	25	30
	H1	X34A-DG-40H1	14	1041	2050	19	28
	H2	X34A-DG-40H2	14	1041	2310	22	26
	H3	X34A-DG-40H3	14	1041	2580	26	24
45	C4	X34B-DG-45C4	14	795	1390	20	49
	C3	X34B-DG-45C3	14	795	1630	24	45
	C2	X34B-DG-45C2	14	795	1880	30	41
	C1	X34B-DG-45C1	14	795	2160	37	38
	H1	X34A-DG-45H1	14	1171	2450	27	36
	H2	X34A-DG-45H2	14	1171	2760	33	33
	H3	X34A-DG-45H3	14	1171	3090	38	31
50	C4	X34B-DG-50C4	14	884	1630	27	61
	C3	X34B-DG-50C3	14	884	1910	34	56
	C2	X34B-DG-50C2	14	884	2210	42	52
	C1	X34B-DG-50C1	14	1301	2530	32	48
	H1	X34A-DG-50H1	14	1301	2880	39	45
	H2	X34A-DG-50H2	14	1301	3240	46	42
	H3	X34A-DG-50H3	14	1301	3620	54	39
55	C4	X34B-DG-55C4	14	972	1890	37	75
	C3	X34B-DG-55C3	14	972	2210	47	68
	C2	X34B-DG-55C2	14	972	2550	58	63
	C1	X34B-DG-55C1	14	1431	2930	44	58
	H1	X34A-DG-55H1	14	1431	3320	52	54
	H2	X34A-DG-55H2	14	1431	3740	62	51
	H3	X34A-DG-55H3	14	1431	4180	73	48
60	C4	X34B-DG-60C4	14	1060	2150	49	90
	C3	X34B-DG-60C3	14	1060	2520	62	82
	C2	X34B-DG-60C2	14	1060	2910	76	76
	C1	X34B-DG-60C1	14	1561	3340	58	70
	H1	X34B-DG-60H1	14	1561	3790	69	65
	H2	X34B-DG-60H2	14	1561	4270	82	61
	H3	X34B-DG-60H3	14	1561	4770	96	58

LENGTH (FT)	CLASS	CATALOG NUMBER, UNDRILLED	DIAMETER (IN)	WEIGHT (LBS)	WEIGHT (CLASS B SYP)	DEFLECTION FOR RATING (IN)	DEFLECTION (CLASS B SYP)
65	C4	X34B-DG-65C4	14	1149	2430	63	107
	C3	X34B-DG-65C3	14	1149	2840	79	97
	C2	X34A-DG-65C2	14	1691	3290	61	90
	C1	X34A-DG-65C1	14	1691	3770	74	83
	H1	X34A-DG-65H1	14	1691	4380	89	77
	H2	X34A-DG-65H2	14	1691	4820	106	72
70	C3	X34B-DG-70C3	14	1237	3810	100	114
	C2	X34A-DG-70C2	14	1821	3690	77	105
	C1	X34A-DG-70C1	14	1821	4220	94	97
	H1	X34A-DG-70H1	14	1821	4790	113	90
	H2	X34A-DG-70H2	14	1821	5390	134	85
75	C3	X34B-DG-75C3	14	1325	3540	125	131
	C2	X34A-DG-75C2	14	1951	4090	96	121
	C1	X34A-DG-75C1	14	1951	4690	117	112
	H1	X34A-DG-75H1	14	1951	5320	140	104
80	C3	X34B-DG-80C3	14	1414	3900	152	150
	C2	X34A-DG-80C2	14	2081	4520	118	138
	C1	X34A-DG-80C1	14	2081	5170	143	128
	H1	X34A-DG-80H1	14	2081	5870	172	119

[1] Wood properties data are per ANSI O5.1-2022 Table 1. For other wood species not shown in the table above, visit macleanpower.com or contact a respresentative for suggestions.

[2] FRP pole sizes are selected based on allowable Class loads specified in NESC Table 261-1. For Grade B construction, strength factor for FRP is 1.00. The values for 14 x 0.75 in pole have been verified by third-party full-scale testing. The values for 14 x 0.5 in pole, which is in development, are estimates and will be verified by third-party full-scale testing.

[3] Load classes and pole embed depths used in calculations are per ANSI O5.1-2022 tables. For load classes and pole lengths outside of those listed, please contact MacLean Power.

[4] Horizontal load, 2ft from the pole tip. Allowable Class loads are based on NESC Table 261-1. For Grade B construction, strength factors for wood is 0.65.

[5] Pole tip horizontal deflection at the allowable Class load, based upon published mean moduli of elasticity of wood and FRP. Wood poles' diameters are per ANSI O5.1 tables, and their (tapered) flexural stiffness. The calculations are based on ASTM D1036-99 Eq. (5).

* Indicates excessive deflection while the strength is sufficient.

FRP POLE SECTIONAL PROPERTIES

	GRIDCORE™ FRP POLE[2]	
	14.0 X 0.5 IN	14.0 X 0.75 IN
Nominal Fiber Stress, F^b (psi)	45000	45000
NESC Construction[b]	Grade B	Grade B
Strength Factor, ∅[b]	1.0	1.0
Modulus of Elasticity E (10^6 psi)	5.00	5.63
Density (lb/ft^3)	120	120
Outer Diameter (in)	14	14
Wall Thickness (in)	0.50	0.75
Inner Diameter (in)	13.00	12.50
Moment of Inertia, I (in^4)	484	687
Flex. stiff., EI (lb-in^2 10^6)	2419	3870
Section Modulus, S (in^3)	69.10	98.20
Allowable Moment., ∅ FS (kip-ft)	259	368
Cross Section Area, A (in^2)	21	31
Weight (lb/ft)	17.70	26.00

[a] The values for 14 x 0.75 in pole have been verified by third-party full-scale testing. The values for 14 x 0.5 in pole, which is in development, are estimates and will be verified by third-party full-scale testing.

[b] FRP pole sizes are selected based on allowable class loads specified in NESC Table 261-1. For Grade B construction, strength factor for FRP is 1.00. Fiber stress is at 5% LEL, and modulus of elasticity is at mean.

WOOD POLE DESIGN PARAMETERS

	SOUTHERN YELLOW PINE EQUIVALENT WOOD POLE
Nominal Fiber Stress, F^a (psi)	8,000
NESC Construction[b]	Grade B
Strength Factor, ∅[b]	0.65
Modulus of Elasticity E^a (10^6 psi)	2.13
Estimated Density (lb/ft^3)	65

[a] Average properties per ANSI O5.1-2022 Table 1.

[b] Per NESC Table 261-1

LOAD CLASS EQUIVALENCIES[1]

WOOD SPECIES[2]		SOUTHERN YELLOW PINE			
DESIGN BASIS		MATCHING DEFLECTION		MATCHING STRENGTH	
GRID CORE POLE SIZE		14 X 0.50	14 X 0.75	14 X 0.50	14 X 0.75
Pole Length (ft)	40	1	H2	H6	H6
	45	1	H2	H6	H6
	50	2	H1	H4	H6
	55	2	H1	H4	H6
	60	3	1	H3	H5
	65	3	1	H2	H5
	70	3	1	H1	H4
	75	*	1	H1	H4
	80	*	3	H1	H4

[1] This table is to assist users to size GridCore™ composite poles to match performance of common wood poles based on mean moduli of elasticity of wood and FRP (NESC Grade B construction).

[2] Average modulus of elasticity and fiber stress per ANSI O5.1-2022 were used in the calculations.

[3] No data for wood poles from ANSI O5.1 for this length and load class.

MacLean™ POWER SYSTEMS

LEADING THE WAY™

At MacLean Power Systems, we are setting the pace for what's next in utility infrastructure - with innovation, speed, and resilience at the core of everything we do.

American-Made. We deliver fast turnarounds, uncompromising quality, and the kind of strategic reliability the grid demands. Built here. Built right.

We move at the speed of innovation - turning ideas into field-ready solutions faster than ever. And our products are designed with linemen in mind: easy to spec, quick to install, and built to perform in the toughest conditions.

From engineering expertise to post-install support, MPS is more than a manufacturer - we're a partner you can count on, start to finish.

MacLean Power Systems. Built for resilience. Engineered for progress.