

# Plasma<sup>®</sup> 12x12

Plasma<sup>®</sup> 12x12 is a 12-strand braided rope in which each of the 12 strands is, in turn, a 12-strand rope, or braided primary strand.

Plasma is manufactured from High Modulus Polyethylene (HMPE) that has been enhanced by Cortland's recrystallization process.

This construction addresses the most critical properties of the fibers to provide a very high strength translation efficiency for larger ropes. This design allows for long lay lengths, making rope that is more flexible for bending applications, easy to inspect, and can be quickly spliced using standard 12 strand splicing techniques. Plasma 12x12 is supplied with our standard polyurethane finish, although other coatings can be applied to suit specific applications.

## Features & Benefits

- World's strongest rope for its weight
- Long lengths available
- High flex fatigue and abrasion resistance
- Easy to splice, inspect, and repair
- Neutrally buoyant in water
- Select sizes are ABS & DNV type approved

## Applications

- Replacement for wire rope heavy lift slings
- Tug vessel assist lines
- Vessel mooring lines
- Offshore working ropes
- Lashings

## Type approved product



Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/100ft	kg/100m	lbs	MT (tonnes)	lbs	MT (tonnes)
<b>ABS and DNV type approved sizes – up to 4" diameter (96 mm)</b>								
1-5/8	40	5	66	98	291,000	132	323,300	147
1-3/4	44	5-1/2	78	117	314,000	142	348,900	158
2	48	6	91	136	355,000	161	392,450	178
2-1/8	52	6-1/2	109	162	428,000	194	475,600	216
2-1/4	56	7	122	182	481,000	218	534,400	242
2-1/2	60	7-1/2	148	220	530,000	240	588,900	267
2-5/8	64	8	167	249	596,000	270	662,200	300
2-3/4	68	8-1/2	187	278	660,000	299	733,300	333
3	72	9	214	319	780,000	354	866,700	393
3-1/8	76	9-1/2	235	350	850,000	386	944,400	428
3-1/4	80	10	261	388	940,000	426	1,045,400	474
3-1/2	84	10-1/2	298	443	1,108,000	503	1,231,000	559
3-5/8	88	11	324	482	1,250,000	567	1,388,900	630
3-3/4	92	11-1/2	343	510	1,317,000	598	1,463,000	664
4	96	12	394	586	1,520,000	690	1,689,000	766
4-1/8	100	12-1/2	457	679	1,622,000	736	1,802,000	818
4-1/4	104	13	514	765	1,697,000	770	1,886,000	856
4-1/2	108	13-1/2	530	789	1,827,000	829	2,030,000	921
4-5/8	112	14	546	812	1,880,000	853	2,089,000	948
4-3/4	116	14-1/2	587	873	1,927,000	874	2,141,000	971
5	120	15	606	902	2,069,500	939	2,299,000	1043
5-1/8	124	15-1/2	657	978	2,212,000	1004	2,458,000	1115
5-1/4	128	16	703	1046	2,355,000	1069	2,617,000	1187
5-1/2	132	16-1/2	749	1114	2,497,500	1133	2,775,000	1259
5-5/8	136	17	813	1210	2,640,000	1198	2,933,000	1331
5-3/4	140	17-1/2	871	1296	2,782,500	1262	3,092,000	1403
6	144	18	932	1386	2,925,000	1327	3,250,000	1475
6-1/8	148	18-1/2	985	1465	3,068,000	1392	3,409,000	1547
6-1/4	152	19	1038	1545	3,210,500	1457	3,567,000	1618
6-1/2	156	19-1/2	1103	1642	3,353,000	1521	3,726,000	1691
6-5/8	160	20	1159	1725	3,496,000	1586	3,884,000	1762
6-3/4	164	20-1/2	1227	1827	3,638,500	1651	4,043,000	1834
7	168	21	1284	1911	3,781,000	1716	4,201,000	1906
7-1/8	172	21-1/2	1334	1986	3,963,500	1798	4,404,000	1998
7-1/4	176	22	1392	2072	4,066,000	1845	4,518,000	2050
7-1/2	180	22-1/2	1452	2161	4,209,000	1910	4,677,000	2122
7-5/8	184	23	1527	2272	4,351,500	1974	4,835,000	2194
7-3/4	188	23-1/2	1589	2365	4,494,000	2039	4,993,000	2265
8	192	24	1653	2459	4,637,000	2104	5,152,000	2338
8-1/8	196	24-1/2	1732	2578	4,779,000	2168	5,310,000	2409
8-1/4	200	25	1798	2677	4,922,000	2233	5,469,000	2481

**Size:** Diameter and circumference are nominal. A new unused rope in relaxed state will measure larger; loading and use compacts ropes, sets splices and lessens rope size. This is especially prevalent in sizes above 4" diameter. Published nominal sizes from 4-1/8" and larger represent stabilized or preloaded size.

**Weights:** Published weights of sizes 1-5/8"– 4" diameter are calculated at linear density under stated preload (200d<sup>2</sup>) plus 4%. For this chart, sizes 4-1/8"–8-1/4" diameter represent un-cycled, (non-stabilized) weights.

**Tensile Strengths:** Tensile strength determined in accordance with Cordage Institute 1500 Test Methods for Fiber Ropes and ISO 2307.

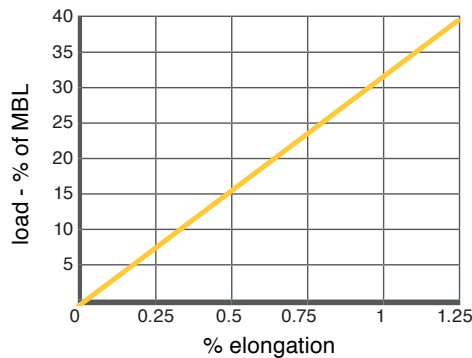
# Plasma® 12x12

## Technical Information

Specific gravity	0.98*
Melting point	284°F (140°C)
Critical temp.	150°F (65°C)
Coefficient of friction	0.09–0.12*
Elongation at break	3%–4%
Fiber water absorption	0%
UV resistance	moderate
Wet abrasion	superior
Dry abrasion	superior

\* value based on data supplied by the fiber manufacturer for new, dry fiber

Plasma® 12x12 Elongation (%)



## Rope Specifications

**Minimum Tensile Strength** Minimum Tensile Strengths shown are for new (unused) rope and will decrease after use. All tests are performed in accordance with Cordage Institute Standard CI 1500-2. The rope strength will be reduced after use due to heat, abrasion, ultraviolet or chemical exposure. The tensile strengths may be further reduced by up to 50% as a result of knots or kinks. Minimum Tensile Strengths are defined as two standard deviations (typical about 10%) below the average.

**Maximum Working Loads** Maximum Working Loads are determined by dividing the tensile strength by the safety factor. The safety factor is a function of the physical properties of the rope, the age and history of the rope, the type of service it will be subjected to and the risks involved if failure occurs. For a rope manufacturer to give blanket working load recommendations would be like a car manufacturer giving the “safe driving speed” of their cars. Obviously the conditions of use far outweigh the design characteristics of the rope. Typically safety factors vary from 3:1 (for new rope used in applications with uniform loading and where failure would cause little or no risk to equipment or personnel) to 20:1 (for conditions involving moderate shock loading, possibility of snags or kinks or where failure could cause severe risk to equipment or personnel).

**Rope Weights** Rope Weights shown are average and may vary plus or minus 5%.

**Working Elongation** Working Elongation is shown from a preload tension of 200 times the diameter squared per the Cordage Institute Standard.

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## Special Requirements

**Factory Splicing** Various types are available for all of our ropes. Splices can be provided with various types of chafe protection or coatings.

**Custom Lengths** Special constructions are available on request.

**Rope Terminations** Cortland can provide custom terminations such as thimbles, links, rings and custom hardware. Terminations are available in plastic, bronze, stainless steel and galvanized steel. Please call, or email your requirements to [cortland@cortlandcompany.com](mailto:cortland@cortlandcompany.com) for a quotation.

**Special Coatings** Coatings such as polyurethane, polyethylene and vinyl esters may be applied to any of the synthetic ropes to improve snag resistance, sunlight resistance or for color coding. Cortland can provide ropes with a variety of finishes to meet your needs.

**Commercial and Military Specifications** Certificates of compliance are supplied at no charge if requested when placing the order. Certified test reports can be provided at an additional charge when requested at the time of the order.

Plasma® is a Trademark of Cortland.

