



# engineered synthetic fiber rope slings

**HIGH PERFORMANCE SLINGS** FOR SURFACE  
AND SUBSEA LIFTING OPERATIONS



**CORTLAND**

[cortlandcompany.com](http://cortlandcompany.com)



## trusted brands

### **Cortland has long been recognized for its unique ability to custom-engineer technically-superior fiber solutions**

As an originator of fiber braiding technology, Cortland has over 25 years experience engineering certified synthetic lifting sling solutions that safely and efficiently perform to exacting standards.

**CERTIFIED RELIABILITY** - Cortland fiber slings adhere to DNV, ASME and other key standards. All slings are tagged appropriately and backed by extensive production process control documentation. Engineered and proof-loaded to meet precise length tolerances, each Cortland sling uses secure construction with efficient splice terminations.

**PUGET SOUND ROPE** - Through our Puget Sound Rope brand, you have access to a variety of high performance synthetic rope products that can be custom fabricated into solutions that meet your specific size and strength requirements. Using our innovative-patented rope manufacturing technology, we offer large diameter rope products designed for operational efficiency, safety and cost savings.

### ***PUGET SOUND ROPE***

*A Trusted Cortland Brand*

#### **market product leadership in:**

- deepwater lifting & lowering lines
- deepwater installation slings
- slings with high vertical hitch MBL
  - eye-to-eye slings up to 2233Te
  - grommet slings up to 3685 Te

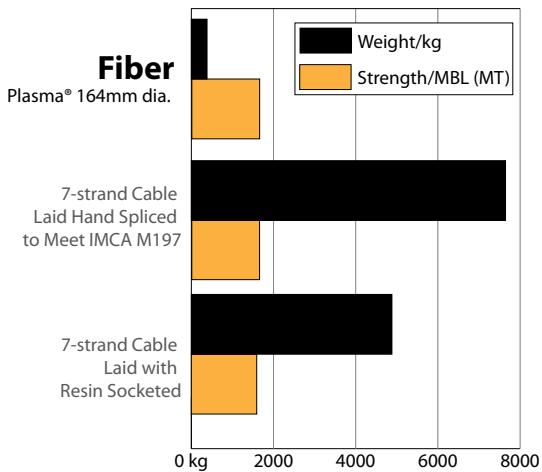
#### **patented rope products & construction**

- Plasma®
- Plasma® 12x12 construction
- BOB™ blended fiber lifting/lowering line



# synthetic fiber sling advantages

Strength to Weight Comparison



## Cortland lifting slings allow operators to rig and lift in less time with greater safety and less damage to equipment

**TIME** - Lightweight fiber slings offer significant reductions in rigging time and manpower. They are 1/7th the weight of steel wire rope or more. In heavy lift projects, installation crews also receive savings in transportation and storage costs.

**HSE BENEFITS** - Lightweight rope and round slings offer superior flexibility which translates into fewer rigging injuries. They are also soft of hand causing little damage to rigger or expensive payloads.

**LONGER SERVICE LIFE** - Modern high strength synthetic fibers are remarkably durable and will not rust, corrode or fish-hook. They are not affected by fresh or salt water. Wear points can be protected from abrasion, cutting and heat damage. They are designed for multiple lift use and are easy to inspect.

**CUSTOM DESIGN SOLUTIONS** - Cortland slings are available in large diameter long lengths in various sling configurations. As with all of our products, we produce customized solutions to the exacting standards of our customers.



# synthetic fiber rope slings



**PUGET SOUND ROPE SLINGS**  
*Patented Plasma®*  
*(High Modulus PolyEthylene)*

**Our patented Plasma® 12 x 12 braided construction creates extremely strong lifting slings that are very lightweight, flexible, non-marring and durable**

**WORLD'S STRONGEST ROPE FOR ITS WEIGHT** - Cortland's patented Plasma® rope is strong enough for very heavy lifts yet durable enough for repeated use. Our exclusive Plasma® technology processes HMPE fibers into maximum strength efficiency. These fibers are then braided into a torque-free rope. Plasma® low elongation properties, its high strength, flexibility and light weight make it a perfect replacement for large diameter wire rope slings. In a same strength and size comparison, Plasma® ropes are only 1/7th the weight of common steel wire rope.

## specifications:

<b>materials:</b>	Patented Plasma® HMPE (other high modulus synthetic fibers available such as Aramid or LCP)
<b>construction:</b>	Patented 12 x 12 torque-free braid
<b>jacket:</b>	None – Cordura® or other braided covers available
<b>capacity:</b>	Nominal diameter sizes up to 200mm • Eye-to-eye vertical hitch – up to 2233 Te MBL • Grommet vertical hitch – up to 3685 Te MBL
<b>length:</b>	Unlimited long lengths – short lengths dependent on size and “free area between splices”
<b>length tolerance:</b>	As low as +/- .25% of nominal length
<b>certifications:</b>	DNV, ASME and others



**PATENTED 12 X 12 STRAND CONSTRUCTION** - The 12 x 12 rope construction design produces a finished braid which is firm yet flexible, and offers the ability to produce extremely long lengths. Utilizing the largest 12-strand braider in the world, Cortland can produce extremely large diameters (up to 200mm) and lengths of Plasma<sup>®</sup> rope. Fabricated into lifting slings, 12 x 12 construction produces a very compliant yet durable sling.

**EASY TO REPAIR AND INSPECT** - Unlike heavy firm construction wire ropes and jacketed round slings, Plasma<sup>®</sup> 12 x 12 rope slings are extremely easy to inspect. Inspectors can easily review external or internal wear. If repair is needed, the 12 x 12 construction offers the ability to replace worn “strands”.

**NEUTRALLY BUOYANT** - Unlike steel wire rope slings, Plasma<sup>®</sup> 12 x 12 rope slings are neutrally buoyant in water so there is no reduction in lifting capacity once immersed. These ropes are gaining popularity as sling-extensions to offshore crane wire rope lifting systems because of their light weight and ease in handling. Plasma<sup>®</sup> HMPE fibers also do not absorb water.

### advantages

Lowest price large diameter synthetic fiber lifting slings
No upper length limitations
Lightweight and easy handling
Good D:d ratios and bend fatigue
Can be quickly fabricated on site
Chafe gear options for specific wear points
Can be directly coupled to hardware
Custom design per application
Inspectability and repair
Previous successful uses in heavy lift replacing wire rope

### applications

#### surface overhead crane lifting slings (below the hook) for:

- Wind farm installation; towers and props
- Industrial material movement or transfer; power turbines, etc.
- Shipyards

#### offshore & subsea lifting

- Installation of suction piles, anchors, support structures, manifolds, buoys, etc.
- Load transfer and pull-in operations
- Jackets

### features

- Lightweight versus wire rope slings
- Low D: d ratio efficiencies
- High flex fatigue and abrasion resistance
- Available in eye-to-eye or grommet sling configurations
- Long lengths available with or without termination hardware
- Secure splice terminations
- Easily inspected and repaired
- Durable wear protection options available
- RFID tagging available



# specialty rope sling chafe solutions

## Adequate chafing protection is important for synthetic slings, and Cortland offers several different wear protection products

Plasma 12 x 12 rope sling construction is highly advantageous for inspection and repair. However, to add extra chafe and cut protection to eye termination areas or on the sling body itself, Cortland offers a wide array of synthetic fiber options which range by price and performance. Cortland chafe sleeves can be replaced and work well on new or used rope. All options are available from the rope mill or authorized fabricating distributors.

**NXT CHAFE SLEEVE** - A tightly braided nylon chafe sleeve with proprietary heavy marine polyurethane coating for use in extreme chafe applications. Excellent choice for eye termination or selected area body placement; braid-spliced or seized in place. Covers rope sling sizes from 24mm diameter through 92mm diameter.

**SX CHAFE SLEEVE** - combining the lightweight, non water-absorbing properties of HMPE fiber in a tightly braided cover sleeve, SX offer the best cut and abrasion resistance of all chafe gear. SX has a high visibility polyurethane coating. Primary usage is in eye termination protection and can be seized or spliced into the 12 x 12 construction.

**SPECTRA-LITE CHAFE SLEEVE** - Cortland's Spectra-lite chafe sleeve is a tightly woven HMPE fiber fabric material. Available in a sewn tube or in a tubular sleeve with a hook and loop fastening system, this sleeve can fit over eye terminations of rope slings, or be placed on the sling body for extra protection against cutting and abrasion. Cortland's Spectra-lite will not absorb water, is "thin-walled" and very lightweight. It can cover any size rope sling from 24mm diameter and larger.



**NOTE:** NX Plus and NXT chafe protection is also available in polyester (DX Plus and DXT) which offers better chafe protection than nylon, Other colors available upon request.



## Plasma® 12 x 12 rope sling specifications - vertical straight pull

Eye-to-Eye Sling								Endless Grommet Sling				
Nominal Size (each leg)			Approximate Weight		Spliced Rope MBL		Spliced Rope WLL (5:1) ASME B30.9 - 20		Spliced Rope MBL		Spliced Rope WLL (5:1) ASME B30.9 - 2010	
Dia. (inches)	Dia. (mm)	Circ. (inches)	Lbs./foot	Kg/meter	Lbs.	MT (tonne)	Lbs.	MT (tonne)	Lbs.	MT (tonne)	Lbs.	MT (tonne)
<b>Plasma 12 Strand - 12 x 1</b>												
1	24	3	0.23	0.35	110,000	50	22,000	10	181,500	82	36,300	16
1 1/16	26	3 1/4	0.28	0.41	129,200	59	25,840	12	213,180	97	42,636	19
1 1/8	28	3 1/2	0.32	0.48	147,000	67	29,400	13	242,550	110	48,510	22
1 1/4	30	3 3/4	0.36	0.54	165,000	75	33,000	15	272,250	124	54,450	25
1 5/16	32	4	0.42	0.62	196,000	89	39,200	18	323,400	147	64,680	29
1 1/2	36	4 1/2	0.52	0.77	221,000	100	44,200	20	364,650	165	72,930	33
<b>Plasma 12 x 12</b>												
1 5/8	40	5	0.66	0.98	291,000	132	58,200	26	480,150	218	96,030	44
1 3/4	44	5 1/2	0.78	1.17	314,000	142	62,800	28	518,100	235	103,620	47
2	48	6	0.91	1.36	355,000	161	71,000	32	585,750	266	117,150	53
2 1/8	52	6 1/2	1.09	1.62	428,000	194	85,600	39	706,200	320	141,240	64
2 1/4	56	7	1.22	1.82	481,000	218	96,200	44	793,650	360	158,730	72
2 1/2	60	7 1/2	1.48	2.20	530,000	240	106,000	48	874,500	397	174,900	79
2 5/8	64	8	1.67	2.49	596,000	270	119,200	54	983,400	446	196,680	89
2 3/4	68	8 1/2	1.87	2.78	660,000	299	132,000	60	1,089,000	494	217,800	99
3	72	9	2.14	3.19	780,000	354	156,000	71	1,287,000	584	257,400	117
3 1/8	76	9 1/2	2.35	3.50	850,000	386	170,000	77	1,402,500	636	280,500	127
3 1/4	80	10	2.61	3.90	940,000	426	188,000	85	1,551,000	704	310,200	141
3 1/2	84	10 1/2	2.98	4.40	1,108,000	503	221,600	101	1,828,200	829	365,640	166
3 5/8	88	11	3.24	4.80	1,250,000	567	250,000	113	2,062,500	936	412,500	187
3 3/4	92	11 1/2	3.43	5.10	1,317,000	598	263,400	120	2,173,050	986	434,610	197
4	96	12	3.94	5.70	1,520,000	690	304,000	138	2,508,000	1138	501,600	228

For a full chart of MBL, WLL and Cortland sling values in hitch configurations, please contact Cortland: [cortlandcompany.com](http://cortlandcompany.com).

**Spliced Rope MBL (Minimum Break Load)** is determined in accordance with CI 1500-02 Test Methods for Fiber Rope. Tests are conducted on new spliced rope in laboratory conditions, and therefore no further reductions in MBL are necessary to calculate vertical straight pull sling strengths. Testing method includes cycling the spliced rope sample ten times to 50% of MBL. Testing also assumes a pin diameter D:d ratio of 3:1. For MBL strength ratings on D:d ratio of less than 3:1, please contact the manufacturer.

**Endless grommet MBL rating** is determined by multiplying the eye-and-eye vertical straight pull spliced sling by 1.65; assumes a D:d pin ratio of 3:1 or greater.

**Nominal rope diameter and circumference:** When new and in *relaxed* state, O.D. (outside diameter) is nominal; usually measuring slightly larger than *stabilized* O.D. Under load, diameters will decrease down closer to published nominal size. Depending on the diameter size, stabilization may decrease the relaxed form rope diameter by 10-20%; this is a result of fiber compaction, constructional elongation and splice setting. (Large diameters will decrease from relaxed O.D. at a greater percentage than smaller diameters). To meet precise sling length tolerances, it is highly recommended that the rope sling be stabilized through pre-loading or proof-loading.

**Weights:** are calculated as linear density under standard pre-load (200d<sup>2</sup>) plus 4%.



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Cortland is driven by innovative thinking, use of high technology materials and attention to detail. Our in-depth understanding of demanding operational environments means we can deliver trusted, proven solutions to our customers worldwide.

Today, Cortland provides innovative, efficient and lightweight rope, slings, cables and umbilicals to the oil and gas, heavy marine, subsea, ROV, seismic, defense and medical markets. Cortland is a part of Actuant Corporation (NYSE: ATU), a diversified industrial company with operations in more than 30 countries.

[cortlandcompany.com](http://cortlandcompany.com)

