CATALOG

MARINE & SHIPPING



CORTLAND INTERNATIONAL™

EVERY SHIP HAS PRECISE REQUIREMENTS

About 90% of the world's goods—raw materials, foodstuffs, manufactured items, and energy products—are transported by ships, underscoring the maritime shipping industry's vital role in today's highly interconnected global economy.

Our journey began with a commitment to excellence and an understanding of the unique challenges posed to the marine market. We stand as a stalwart partner in this industry, leveraging our decades-long experience to deliver engineered solutions that meet and exceed the demanding standards of maritime applications.

The maritime shipping industry understands and respects its essential role in powering global trade. Cortland International fully supports these efforts and we endeavor to remain the reliable partner of choice for the marine and shipping industry.

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RELIABLE TOWING MADE EASY

In towing and salvage, the entire operation relies on the strength and dependability of your towline

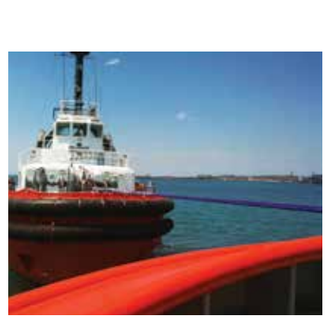
No matter if you specialize in offshore, harbor or river operations, the connection between ship and tug—the towline—is of primary importance. In recent years, the industry has seen an expanded global acceptance of high performance synthetic tow lines, offering greater safety, reliability and performance for tug and salvage operators. Cortland International has delivered synthetic lines made from high modulus polyethylene (HMPE) for more than 25 years, specializing in our 12x12 braiding technique and Plasma® fiber.

As an originator of fiber braiding technology, Cortland offers a full range of high-performance synthetic line and pendant combinations. Our specialized fiber process and construction is size-for-size equal or greater in strength and 86% lighter than steel wire rope. Fiber towlines will not rust or fish-hook and offer superior flexibility in salt or fresh water.

Lighter lines are easier to handle than steel, which translates to fewer stress-related injuries, lower recoil risk and quicker ‘made’ times on each operation.

Our success is based on close interaction with tug operators. Years of global tug, berthing, lifting and mooring experience means you can trust Cortland for the complete engineering package, analysis and design of trusted synthetic fiber lines.









MOORING LINES AND TAILS

Over the past 30 years, we have carefully engineered and manufactured mooring lines using an appropriate combination of raw materials, construction processes especially suited to marine and shipping applications.
Our products allow for high strength, low stretch solutions across a variety of applications. Our products are designed specifically for rugged outdoor use and withstand extreme weather conditions.

These are customized to suit many stringent applications for greater safety. Offering guaranteed safe and cost-effective solutions which are suitable across the globe in a wide variety of industry segments including buoy mooring systems, tug and salvage lines, offshore working and lifting lines, shipping barge mooring lines, inland river lines, utility and winch lines, emergency tow packages and so on.

Global locations to serve customers in any geographic area

A dedicated team of more than 2,500 trained personnel

Manufacturing strength which allows us to produce 35000 MT of rope a year

ISO
Absolutely stringent quality checks in accordance with international standards, which have earned us several certifications including the ISO 9001:2015

We serve a vast array of line applications across the marine and shipping industries

Delivering Quality and Safety for the Marine & Shipping Industry

One of our core areas of expertise lies in supplying high-quality mooring lines to the marine & shipping Industry. Mooring lines are a critical component in maritime operations, ensuring the safe and secure berthing of vessels in ports, terminals, and offshore locations. We understand the diverse needs of our clients, which is why we offer a wide range of mooring lines tailored to meet specific operational requirements.

Our product portfolio includes both high-performance HMPE (High Modulus Polyethylene) lines and Class 1 lines, which are composed of a blend of polyester and polyolefin fibers. HMPE lines are renowned for their exceptional strength, lightweight properties, and resistance to abrasion, making them ideal for demanding applications where performance and durability are paramount. On the other hand, Class 1 lines provide a cost-effective solution without compromising on quality, offering a reliable option for standard mooring operations.

For those seeking a balance between quality and affordability, our mooring lines are designed to deliver the best of both worlds. We pride ourselves on offering competitive pricing while maintaining the highest standards of safety and performance. Safety is at the heart of everything we do, and our mooring lines are engineered to ensure secure handling, reducing the risk of accidents and enhancing operational efficiency.

Whether you require advanced HMPE lines for high-stress environments or dependable Class 1 lines for everyday use, we have the right solution for your needs. Our commitment to quality, safety, and customer satisfaction makes us a trusted partner in the marine & shipping Industry.

If you're looking for mooring lines that combine reliability, performance, and value, we invite you to explore our range of products. Let us help you find the perfect mooring solution for your operations, ensuring safety and efficiency every step of the way.

CERTIFICATIONS

DNV **MEG4 APPROVED**

OCIMF

impa International Marine Purchasing Association **ISO 9001:2015**











TESTING, INSPECTION AND TRAINING

We can provide comprehensive testing and inspection services to ensure the integrity and performance of lines while offering training programs to enhance safety and knowledge among users.

Cortland International's synthetic products have been instrumental in improving operational efficiency and safety in a diverse range of critical operations. To help customers safely manage through the lifecycle of these products, we work closely with clients to better understand long term use and retirement criteria.

Services focus on destructive testing and recertification of synthetic fiber ropes and slings up to 600 metric tonnes. Test equipment offers a 14 foot (4.2m) stroke to accommodate testing of a broad range of products. In conjunction with tensile testing, we have the capability to conduct tension-tension fatigue testing up to full machine capacity thanks to high fatigue rated components.

Testing Services

- Residual strength testing: Test the remaining breaking strength in the rope
- Max tension/tension and break load 600 metric tonnes
- Full capacity testing to 30 meters in overall length
- 200HP pump offers full capacity cyclic RAM speed of 44 in/min, 1.1m/min
- Fully comply with all relevant legislative and internally recognized testing standards
- Test report: After testing, provide a comprehensive report containing all the aspects of the rope tested.

Inspection Services

- Regular inspections: Conduct routine visual inspections to identify wear, damage, and degradation. This includes checking for fraying, cuts, and signs of UV damage.
- Inspection report: After inspection, provide a comprehensive report containing all the aspects of the rope inspected.

Training Programs

- Workshops: Offer training workshops for crew members and staff, focusing on safe handling, proper usage, and maintenance of lines.
- Best practices: Educate participants on recognizing signs of wear and understanding the importance of timely inspections and replacements.

Product Specifications and Tolerances

The specifications presented in this catalogue are based on industry standards (Cordage Institute and ISO) for the determination of tensile strength, nominal diameter and other performance properties. End user safety factors and design requirements may vary by market segment, vessel type, operator preference and relevant industry regulatory requirements.

Towing systems – mainlines and stretchers are commonly selected in accordance with a chosen IACS requirement (based on operator class preferences and regions). These typically result in towline factors of safety between 2.5:1 and 5:1, which can be used to identify and select appropriately sized towing system components.

Vessel mooring systems – most operators defer to compliance with OCIMF's MEG4 guidelines which have been harmonized with recent updates to IMO's SOLAS requirements. Performance properties for our mooring lines and tails are defined in accordance with OCIMF MEG4 testing guidelines and results have been endorsed by DNV as noted in the relevant product Base Design Certificates, available upon request.

Physical tolerances - Diameters stated are all nominal values. Lengths are supplied +/- 5% for Class 1 ropes and +5/-0% for HMPE ropes. Linear density (kg/m) specifications are supplied with tolerance of +/-5%.

For unique applications with more precise finished length or diameter tolerances, please contact your Cortland Sales Representative to discuss appropriate solutions to ensure your specifications are properly understood and documented.









Plasma® 12-Strand
Dyneema® 12-Strand

Plasma® 12-Strand ropes are the culmination of 25 years of engineering expertise in the HMPE industry. Our dedication to providing customers with industry-leading synthetic line is and always has been the goal. Our continued innovation and unwavering desire are to provide the strongest and most reliable product available.

Plasma 12-Strand is delivered standard with a polyurethane finish and is easily spliced using a simple lockstitch type splice, 5-4-3 tuck splice. Its soft, torque free braided construction provides easy handling.

Features & Benefits
- Highest strength
- Lowest stretch
- Low creep
- Soft hand
- Torque-free
- Easy splicing
- Floats
- Select sizes are ABS & DNV type approved
- Sizes 16mm–36mm are MEG4 approved

Applications
- Vessel mooring lines
- Inland river barge lines
- Lifting slings
- Replacement for wire rope

Type approved product

MARITIME
MEG4 APPROVED

Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope/LDBF		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
0.04	1	**0.12**	**0.05**	0.1	**270**	0.1	**300**	0.13
0.05	1.25	**0.15**	**0.07**	0.1	**390**	0.2	**430**	0.20
0.06	1.5	**0.18**	**0.1**	0.1	**475**	0.2	**525**	0.23
0.07	1.75	**0.21**	**0.14**	0.2	**750**	0.3	**830**	0.38
0.1	2.5	**0.3**	**0.27**	0.4	**1,400**	0.6	**1,550**	0.7
1/8	3	**3/8**	**0.54**	0.8	**2,800**	1.3	**3,100**	1.4
3/16	5	**9/16**	**1.12**	1.7	**5,500**	2.5	**6,100**	2.8
1/4	6	**3/4**	**1.6**	2.4	**8,000**	3.6	**8,890**	4.0
5/16	8	**15/16**	**2.5**	3.7	**11,700**	5.3	**13,000**	5.9
3/8	9	**1-1/8**	**3.7**	5.5	**17,500**	7.9	**19,400**	8.8
ABS and DNV Type Approved Sizes								
7/16	11	**1-1/4**	**4.2**	6.3	**21,000**	9.5	**23,400**	10.6
1/2	12	**1-1/2**	**6.4**	9.5	**31,300**	14.2	**34,800**	15.8
9/16	14	**1-3/4**	**7.9**	11.8	**37,900**	17.2	**42,100**	19.1
5/8	16	**2**	**10.6**	15.8	**51,400**	23.3	**57,100**	25.9
3/4	18	**2-1/4**	**13.3**	19.8	**68,500**	31.1	**76,300**	34.6
13/16	20	**2-1/2**	**15.9**	23.7	**74,000**	33.6	**82,200**	37.2
7/8	22	**2-3/4**	**19.6**	29.2	**92,600**	42.0	**102,900**	46.7
1	24	**3**	**23.4**	34.8	**110,000**	49.9	**122,100**	55.4
1-1/16	26	**3-1/4**	**27.5**	40.9	**129,200**	58.6	**143,500**	65.1
1-1/8	28	**3-1/2**	**31.9**	47.5	**147,000**	66.7	**163,300**	74.1
1-1/4	30	**3-3/4**	**36.2**	53.9	**165,000**	74.9	**183,100**	83.1
1-5/16	32	**4**	**41.7**	62.1	**196,000**	88.9	**217,800**	98.8
1-1/2	36	**4-1/2**	**51.7**	76.9	**221,000**	100.3	**245,500**	111.3

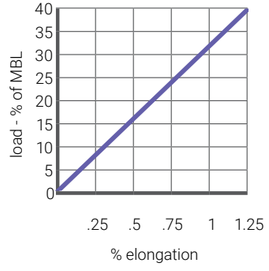
Tensile strengths are determined in accordance with Cordage Institute 1500.2. Test Methods for Fiber Rope. Minimum Tensile Strength (MTS) published assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d²) plus 4%. Diameter and circumference size published is nominal and reflects rope size after loading (10 cycles) to 50% of MTS.

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	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

Plasma® 12-Strand Elongation (%)





Plasma® 12x12
Dyneema® 12x12-Strand

Plasma® 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. This construction addresses the most critical properties of the fibers to provide a very high strength translation efficiency for larger ropes. The design also provides superior snag resistance compared to other 12x12 designs which is important when dragging the rope. Plasma 12x12 is supplied with our standard polyurethane finish, although other coatings can be applied to suit specific applications.

Cortland's Plasma 12x12 ropes are the culmination of 25+ years of engineering expertise in the HMPE industry. Our dedication to providing customers with industry-leading synthetic line is and always has been the goal. Our continued innovation and unwavering desire are to provide the strongest and most reliable product available.

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
- Sizes 40mm–64mm are MEG4 approved

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

Type approved product

MARITIME
MEG4 APPROVED

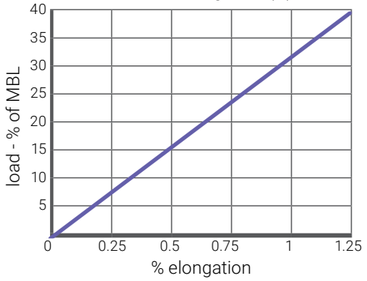
Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope/LDBF		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
ABS and DNV type approved sizes – up to 4" diameter (96 mm)								
1-5/8	40	**5**	**66**	98	**291,000**	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

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	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

Plasma® 12x12 Elongation (%)



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 (200d²) 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.



Toro® 12-Strand

HMPE 12-Strand

Toro® is a 12-Strand braided rope with high strength-to-weight ratio and, size-for-size, offers the same strength as steel. Toro 12-strand is manufactured from High Modulus Polyethylene (HMPE) and is an excellent wire rope replacement with low stretch, superior flex fatigue and wear resistance.

Toro 12-strand is delivered standard with a polyurethane finish and is easily spliced using a simple lockstitch bury splice, or tuck splice. Its soft, torque free braided construction provides easy handling and inspection.

Features & Benefits

- High strength
- Lowest stretch
- Low creep
- Soft hand
- Torque-free
- Easy splicing
- Floats
- Sizes 16mm–36mm are MEG4 approved

Applications

- Vessel mooring lines
- Tug vessel assist lines
- Offshore working ropes
- Inland river barge lines
- Lifting slings
- Replacement for wire rope

Type approved product

DNV · ABS TYPE APPROVED PRODUCT · OCIMF

CERTIFIED BY DNV MARITIME

MEG4 APPROVED

Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope/LDBF		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
1/8	3	3/8	0.69	1.03	2,800	1.27	3,110	1.41
3/16	5	9/16	1.20	1.79	5,500	2.49	6,110	2.77
1/4	6	3/4	1.7	2.6	8,000	3.63	8,880	4.0
5/16	8	15/16	2.6	3.8	11,700	5.31	12,990	5.9
3/8	9	1-1/8	3.6	5.3	17,500	7.94	19,440	8.8
7/16	11	1-1/4	4.8	7.1	22,000	10.0	24,400	11.1
1/2	12	1-1/2	6.1	9.1	30,500	13.8	33,800	15.4
9/16	14	1-3/4	7.6	11.3	36,500	16.6	40,500	18.4
5/8	16	2	9.4	14.1	47,800	21.7	53,100	24.1
3/4	18	2-1/4	13.5	20.1	61,800	28.0	68,600	31.1
13/16	20	2-1/2	15.8	23.5	74,000	33.6	82,200	37.3
7/8	22	2-3/4	18.5	27.5	84,300	38.2	93,600	42.5
1	24	3	23.7	35.3	105,000	47.6	116,600	52.9
1-1/16	26	3-1/4	26.9	40.0	121,600	55.1	135,000	61.3
1-1/8	28	3-1/2	30.3	45.1	137,000	62.1	152,200	69.0
1-1/4	30	3-3/4	37.2	55.4	157,000	71.2	174,400	79.1
1-5/16	32	4	41.1	61.2	176,400	80.0	195,900	88.9
1-1/2	36	4-1/2	53.8	80.1	215,000	97.5	238,800	108.3

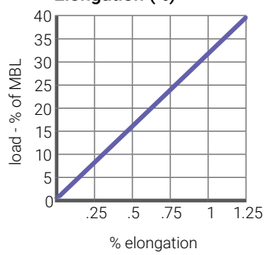
Tensile Strengths are determined in accordance with Cordage Institute CI 1500-02. Test Methods for Fiber Rope. Minimum Tensile Strength (MTS) published assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d²) plus 4%. Diameter and circumference size published is nominal and reflects rope size after loading (10 cycles) to 50% of MTS.

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	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

Toro® 12-Strand Elongation (%)





Toro® 12x12

HMPE 12x12-Strand

Toro® 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. Toro is manufactured from high tenacity High Modulus Polyethylene (HMPE).

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. Toro 12x12 is supplied with our standard polyurethane finish, although other coatings can be applied to suit specific applications.

Features & Benefits

- Highest strength
- Very low stretch
- Lightweight
- Soft hand
- Torque free
- Easy splicing
- Floats
- Long lengths available
- High flex fatigue and abrasion resistance
- Moderate UV resistance
- Easy to inspect and repair
- Neutrally buoyant in water
- Sizes 40mm–64mm are MEG4 approved

Applications

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

Type approved product

DNV · ABS TYPE APPROVED PRODUCT · OCIMF

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MEG4 APPROVED

Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope/LDBF		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
1-5/8	40	5	62.0	92.2	245,000	111	272,100	123
1-3/4	44	5-1/2	72.3	107.6	284,300	129	315,800	143
2	48	6	94.9	141.3	369,900	168	410,900	186
2-1/8	52	6-1/2	108.9	162.0	423,900	192	470,900	214
2-1/4	56	7	121.3	180.5	470,100	213	522,200	237
2-1/2	60	7-1/2	147.9	220.2	569,400	258	632,600	287
2-5/8	64	8	163.8	243.8	630,300	286	700,200	318
2-3/4	68	8-1/2	182.4	271.5	698,400	317	775,900	352
3	72	9	215.4	320.6	819,000	371	909,900	413
3-1/8	76	9-1/2	233.2	347.0	886,500	402	984,900	447
3-1/4	80	10	253.5	377.4	961,300	436	1,068,000	484
3-1/2	84	10-1/2	290.7	432.7	1,095,300	497	1,216,800	552
3-5/8	88	11	314.1	467.6	1,184,300	537	1,315,700	597
3-3/4	92	11-1/2	338.7	504.1	1,273,100	577	1,414,400	641
4	96	12	383.5	570.8	1,435,200	651	1,594,500	723
4-1/8	100	12-1/2	407.0	605.8	1,523,400	691	1,692,400	768
4-1/4	104	13	433.4	645.0	1,618,600	734	1,798,200	816

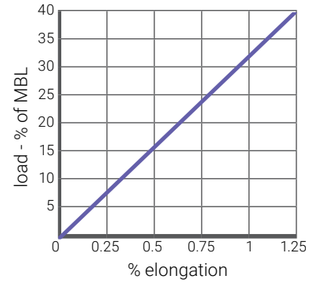
Size: Diameter and circumference are nominal. A new unused rope in relaxed state will measure larger; loading and use compacts ropes, sets splices and lessens rope size.
Weights: Published weights of sizes 1-5/8"–4-1/4" diameter are calculated at linear density under stated preload (200d²) plus 4%.
Tensile Strengths: Tensile strength determined in accordance with Cordage Institute 1500-02 Test Methods for Fiber Ropes and ISO 2307.

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	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

Toro® 12x12 Elongation (%)





Supertuf™ Plus
Polyethylene & Polypropylene Blend, 8- & 12-Strand

Supertuf Plus lines from Cortland are manufactured from a high strength PE/PP blend. A perfect mooring line for large vessels, these ropes have a high strength to weight ratio, float and do not absorb water. Additionally, they have high resistance to abrasion and chemicals.

Supertuf Plus ropes are easily spliced using a standard tuck splice. Its torque free braided construction provides easy handling and prevents kinks and hockles.

Features & Benefits
- Floats
- Good strength to weight
- Excellent abrasion resistance
- Torque free
- Easy splicing

Applications
- Floating mooring lines for barges/vessels
- Floating winch lines
- Lashings

Type approved product

CERTIFIED BY DNV MARITIME
MEG4 APPROVED

OCIMF

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)
3/4	18	2-1/4	10	15	13,691	6.2	15,212	6.9
1	24	3	17	26	24,405	11.1	27,117	12.3
DNV Type Approved Sizes								
1-5/8	40	5	48	72	65,477	29.7	72,752	33.0
1-3/4	44	5-1/2	61	90	78,374	35.6	87,082	39.5
2	48	6	70	104	91,766	41.6	101,963	46.3
2-1/8	52	6-1/2	82	122	105,953	48.1	117,726	53.4
2-1/4	56	7	95	142	120,636	54.7	134,040	60.8
2-1/2	60	7-1/2	110	163	137,699	62.5	152,999	69.4
2-5/8	64	8	124	185	156,846	71.5	174,274	79.1
2-3/4	68	8-1/2	141	209	177,084	80.3	196,761	89.3
3	72	9	157	234	196,231	89.0	218,035	98.9

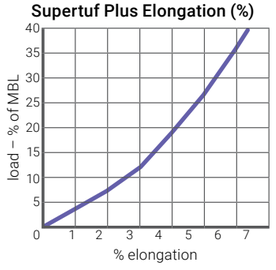
Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload (200d²) plus 4%.

Technical Information

Specific gravity	**0.92***
Melting point	**329°F (165°C)**
Critical temp.	**140°F (60°C)**
Coefficient of friction	**0.16–0.18***
Elongation at break	**15–20%**
Fiber water absorption	**0–1%**
UV resistance	**moderate**
Wet abrasion	**moderate**
Dry abrasion	**moderate**

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

Supertuf Plus Elongation (%)



Supertuf™ NXT
Polyethylene & Polypropylene Blend, 8- & 12-Strand

Supertuf NXT lines from Cortland are manufactured from a high strength PE/PP blend. A perfect mooring line for large vessels, these ropes have a high strength to weight ratio, float and do not absorb water. Additionally, they have high resistance to abrasion and chemicals.

Supertuf NXT ropes are easily spliced using a standard tuck splice. Its torque free braided construction provides easy handling and prevents kinks and hockles.

Features & Benefits
- Floats
- Good strength to weight
- Excellent abrasion resistance
- Torque free
- Easy splicing

Applications
- Floating mooring lines for barges/vessels
- Floating winch lines
- Lashings

Type approved product

CERTIFIED BY DNV MARITIME
MEG4 APPROVED

OCIMF

Size Diameter		Line Linear Density	Weight	Minimum Break Force		Line Design Break Force	
				Unspliced		Spliced	
inch	mm	kg/m	kg/ 220m	Ton	kN	Ton	kN
1	24	0.260	57.20	10.20	100	9.20	90
1-1/16	26	0.310	67.10	12.00	118	10.80	106
1-1/4	28	0.350	78.00	13.90	136	12.50	123
1-5/16	32	0.460	101.20	18.20	178	16.40	161
1-3/8	34	0.520	114.40	20.60	202	18.50	181
1-1/2	36	0.580	127.60	23.10	226	20.80	204
1-9/16	38	0.650	143.00	25.70	252	23.10	226
1-5/8	40	0.720	158.40	28.50	279	25.70	252
1-11/16	42	0.730	160.60	31.50	309	28.40	278
1-3/4	44	0.880	193.60	34.70	340	31.20	306
2	48	1.040	228.80	41.50	407	37.40	367
1-31/32	50	1.130	248.60	44.90	440	40.40	396
2-1/8	52	1.220	268.40	48.50	475	43.70	428
2-5/16	56	1.420	312.40	56.00	549	50.40	494
2-3/8	58	1.520	334.40	59.90	587	53.90	528
2-1/2	60	1.630	358.60	63.90	626	57.50	564
2-5/8	64	1.850	407.00	72.20	708	65.00	637
2-3/4	68	2.090	459.80	83.80	822	75.40	739
3	72	2.340	514.80	96.50	946	86.90	852
3-1/8	76	2.610	574.20	104.10	1021	93.70	919
3-1/4	80	2.900	638.00	111.50	1093	100.40	984
3-5/16	84	3.200	704.00	123.20	1208	110.90	1087
3-5/8	88	3.520	774.40	135.50	1328	122.00	1196
3-3/4	92	4.020	884.80	148.50	1456	133.70	1311
4	96	4.170	917.40	162.00	1588	145.80	1429
4-1/8	100	4.520	994.40	175.30	1719	157.80	1547
4-1/4	104	4.890	1075.80	189.00	1853	170.10	1668
4-3/8	108	5.290	1163.80	203.30	1993	183.00	1794
4-1/2	112	5.700	1254.00	218.00	2137	196.20	1924
4-3/4	116	6.100	1342.00	233.30	2287	210.00	2059
5	120	6.500	1430.00	249.00	2441	224.10	2197

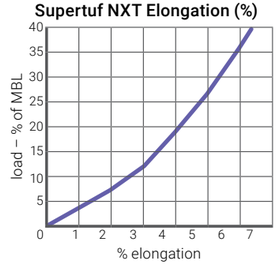
Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload (200d²) plus 4%.

Technical Information

Specific gravity	**0.92***
Melting point	**329°F (165°C)**
Critical temp.	**140°F (60°C)**
Coefficient of friction	**0.16–0.18***
Elongation at break	**15–20%**
Fiber water absorption	**0–1%**
UV resistance	**moderate**
Wet abrasion	**moderate**
Dry abrasion	**moderate**

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

Supertuf NXT Elongation (%)





Tufflex® Lite

Polyester & Copolymer Blend, 8-Strand

Tufflex® Lite offers a high strength to weight ratio and is an excellent replacement for heavier polyester lines. It's unique blend of polyester and polypropylene in each strand makes for a highly efficient construction. Tufflex Lite is torque balanced, has excellent wear resistance, and is one of the quickest ropes to splice.

Tufflex Lite is an excellent choice as mooring, tie-up and pendant lines, tug assist lines and for general purpose heavy marine applications.

Features & Benefits

- Low stretch
- High strength
- Torque free
- Easy splicing
- Soft hand
- Excellent abrasion resistance
- Lighter than 100% polyester ropes

Applications

- Vessel mooring lines
- Tug assist lines
- General purpose heavy marine applications

Type approved product

CERTIFIED BY DNV MARITIME

MEG4 APPROVED

OCIMF

Size Dia.		Line Linear Density (LLD)	Coil Weight	Minimum Break Force		Line Design Break Force (LDBF)	
				Unspliced		Spliced	
inch	mm	kg/m	kg/220m	Ton	kN	Ton	kN
13/16	20	**0.20**	44	**7.0**	69	**6.3**	62
1	24	**0.29**	64	**10.1**	99	**9.1**	89
1-1/16	26	**0.34**	74	**11.8**	116	**10.6**	104
1-1/8	28	**0.39**	86	**13.7**	134	**12.3**	121
1-1/4	30	**0.45**	98	**15.7**	154	**14.1**	138
1-5/16	32	**0.50**	111	**17.9**	175	**16.1**	158
1-1/2	36	**0.64**	141	**24.0**	235	**21.6**	212
1-5/8	40	**0.79**	174	**29.1**	285	**26.2**	257
1-3/4	44	**0.96**	212	**37.3**	366	**33.6**	329
2	48	**1.15**	252	**44.4**	435	**40.0**	392
2-1/8	52	**1.34**	295	**51.6**	506	**46.4**	455
2-5/16	56	**1.56**	343	**59.2**	580	**53.3**	523
2-1/2	60	**1.80**	395	**67.4**	661	**60.7**	595
2-5/8	64	**2.04**	448	**75.9**	744	**68.3**	670
2-3/4	68	**2.30**	505	**85.2**	835	**76.7**	752
3	72	**2.57**	566	**91.6**	898	**82.4**	808
3-1/8	76	**2.87**	632	**103.4**	1014	**93.1**	913
3-1/4	80	**3.19**	701	**116.0**	1137	**104.4**	1024
3-3/8	84	**3.52**	774	**127.7**	1252	**114.9**	1126
3-5/8	88	**3.86**	850	**140.0**	1373	**126.0**	1235
3-3/4	92	**4.21**	927	**152.5**	1495	**137.3**	1346
3-7/8	94	**4.40**	967	**158.9**	1558	**143.0**	1402
4	96	**4.58**	1007	**165.5**	1623	**149.0**	1461
4-1/8	100	**4.98**	1096	**178.9**	1754	**161.0**	1578
4-1/4	104	**5.40**	1189	**192.8**	1890	**173.5**	1701
4-1/2	108	**5.83**	1283	**207.5**	2034	**186.8**	1831
4-5/8	112	**6.27**	1380	**222.7**	2183	**200.4**	1965
4-3/4	116	**6.73**	1480	**238.6**	2339	**214.7**	2105
5	120	**7.20**	1584	**255.1**	2501	**229.6**	2251

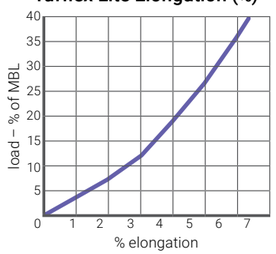
Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload (200d²) plus 5%. Additional sizes available upon request. Please visit cortlandinternational.com or contact your sales representative for full product data sheets.

Technical Information

Specific gravity	**0.98***
Melting point	**329°F (165°C)**
Critical temp.	**140°F (60°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**15–20%**
Fiber water absorption	**0–1%**
UV resistance	**good**
Wet abrasion	**good**
Dry abrasion	**good**

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

Tufflex Lite Elongation (%)





Tufflex® Plus

Polyester & Copolymer Blend, 8-Strand

Tufflex® Plus offers a high strength to weight ratio and is an excellent replacement for heavier copolymer lines. It's unique blend of polyester and copolymer in each strand makes for a highly efficient construction. Tufflex Plus is torque balanced, has excellent wear resistance, and is one of the quickest ropes to splice.

Tufflex Plus is an excellent choice as mooring, tie-up and pendant lines, tug assist lines and for general purpose heavy marine applications.

Features & Benefits

- Moderate stretch
- Torque free
- Easy splicing
- Soft hand
- Excellent abrasion resistance
- Floats

Applications

- Vessel mooring lines
- Tug assist lines
- General purpose heavy marine applications

Type approved product

CERTIFIED BY DNV MARITIME

MEG4 APPROVED

OCIMF

Size Dia.		Line Linear Density (LLD)	Weight	Minimum Break Force		Line Design Break Force (LDBF)	
				Unspliced		Spliced	
inch	mm	kg/m	kg/ 220m	Ton	kN	Ton	kN
1	24	**0.39**	85	**14.8**	145	**13.3**	130
1-1/16	26	**0.45**	99	**17.4**	171	**15.7**	154
1-1/4	28	**0.52**	114	**20.1**	197	**18.1**	177
1-3/16	30	**0.60**	131	**23.1**	226	**20.8**	204
1-5/16	32	**0.68**	149	**26.3**	258	**23.7**	232
1-3/8	34	**0.74**	163	**29.6**	290	**26.6**	261
1-1/2	36	**0.80**	176	**33.0**	324	**29.7**	291
1-9/16	38	**0.89**	196	**37.7**	370	**33.9**	332
1-5/8	40	**0.98**	216	**42.9**	421	**38.6**	378
1-11/16	42	**1.08**	238	**47.2**	463	**42.5**	417
1-3/4	44	**1.19**	262	**51.8**	508	**46.6**	457
2	48	**1.41**	310	**62.0**	608	**55.8**	547
2-1/8	52	**1.66**	365	**73.4**	720	**66.1**	648
2-5/16	56	**1.92**	422	**84.6**	829	**76.1**	746
2-3/8	58	**2.06**	453	**87.4**	857	**78.7**	772
2-1/2	60	**2.21**	486	**95.8**	939	**86.2**	845
2-5/8	64	**2.51**	552	**107.8**	1057	**97.0**	951
2-3/4	68	**2.83**	623	**122.1**	1197	**109.9**	1077
3	72	**3.18**	700	**137.4**	1347	**123.7**	1213
3-1/8	76	**3.54**	779	**152.1**	1491	**136.9**	1342
3-1/4	80	**3.92**	862	**167.4**	1641	**150.7**	1477
3-5/16	84	**4.32**	951	**181.2**	1776	**163.1**	1599
3-5/8	88	**4.75**	1045	**195.0**	1912	**175.5**	1721
3-3/4	92	**5.19**	1142	**212.2**	2080	**191.0**	1873
4	96	**5.65**	1243	**230.0**	2255	**207.0**	2029
4-1/8	100	**6.13**	1349	**249.6**	2447	**224.6**	2202
4-1/4	104	**6.63**	1459	**270.0**	2647	**243.0**	2382

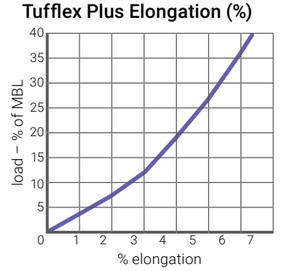
Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload (200d²) plus 5%. Additional sizes available upon request. Please visit cortlandinternational.com or contact your sales representative for full product data sheets.

Technical Information

Specific gravity	**0.98***
Melting point	**329°F (165°C)**
Critical temp.	**140°F (60°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**15–20%**
Fiber water absorption	**0–1%**
UV resistance	**good**
Wet abrasion	**good**
Dry abrasion	**good**

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

Tufflex Plus Elongation (%)





DTM Composite Double Braid

Dyneema® Core, Polyester Jacket, Double Braid

DTM Composite Double Braid ropes have very high strength, are firm with a round profile, and have extremely low stretch. These durable, torque free synthetic ropes are excellent for replacing steel wire rope in winch applications and are designed to withstand drum compression. DTM ropes can be used in multiple applications such as vessel mooring lines for Articulated Tug & Barges (ATB's), Gilson winch lines used in commercial fishing, as well as helicopter long lines.

DTM Double Braid ropes are constructed with a braided Dyneema® HMPE fiber core. This core is encased in a tightly braided jacket of a Polyester fiber that offers high abrasion and durability. The final construction of core and cover work in balance to provide excellent service life.

Features & Benefits

- High strength
- Low stretch
- Soft hand
- Torque-free
- Easy splicing

Applications

- Vessel mooring lines
- Winch lines
- Tug mainline
- Tug pendant
- Recreational vehicle winch lines
- Utility winch and pulling lines
- Theatrical rigging

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)
1	24	**3**	**28.1**	41.9	**97,000**	44	**107,700**	48.8
1-1/8	28	**3-1/2**	**36.2**	53.8	**120,000**	54.4	**133,200**	60.4
1-1/4	30	**3-3/4**	**44.1**	65.6	**145,000**	65.8	**161,000**	73.0
1-5/16	32	**4**	**48.6**	72.4	**159,000**	72.1	**176,500**	80.0
1-3/8	34	**4-1/8**	**52.8**	78.5	**175,000**	79.4	**194,300**	88.1
1-1/2	36	**4-1/2**	**65.1**	96.9	**202,000**	91.6	**224,300**	101.7
1-5/8	40	**5**	**75.5**	112.3	**228,000**	103	**253,100**	114.3
1-3/4	44	**5-1/2**	**85.4**	127.1	**250,000**	113	**277,500**	125.4
1-7/8	46	**5-5/8**	**96.5**	143.5	**297,000**	135	**329,700**	149.9
2	48	**6**	**109.9**	163.6	**332,000**	151	**368,600**	167.6
2-1/8	52	**6-1/2**	**123.2**	183.4	**360,000**	163	**399,600**	180.9
2-1/4	56	**7**	**142.0**	211.3	**408,000**	185	**452,900**	205.4

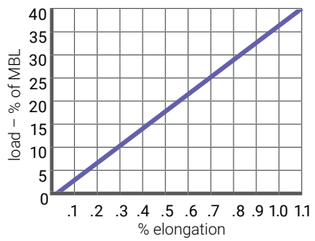
Tensile strengths are determined in accordance with Cordage Institute CI-1500, Test Methods for Fiber Rope and ISO 2307. Published Minimum Tensile Strength (MTS) assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d²) plus 4%. Diameter and circumference size published are nominal and reflect rope size after loading (10 cycles) to 50% of MTS. See reverse side for application and safety information.

Technical Information

Specific gravity	**1.08***
Melting point	**284°F (140°C)**
Critical temp.	**150°F (65°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**4%–5%**
Fiber water absorption	**0%–1%**
UV resistance	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

DTM Composite Double Braid Elongation (%)



* DTM Composite ropes can also be designed with materials other than HMPE for jacketing depending on application. Linear density & external fiber properties will change depending on jacketing material but the strength will remain the same on a per size basis. Please contact Cortland for further information.

DZM Composite Double Braid

HMPE Core, Polyester Jacket, Double Braid

DZM Composite Jacketed ropes have very high strength, are firm with a round profile, and have extremely low stretch. These durable, torque free synthetic ropes are excellent for replacing steel wire rope in winch applications and are designed to withstand drum compression.

DZM ropes can be used in multiple applications such as vessel mooring lines for Articulated Tug & Barges (ATB's), Gilson winch lines used in commercial fishing, as well as helicopter long lines.

DZM Jacketed ropes are constructed with a braided HMPE fiber core. This core is encased in a tightly braided jacket of Polyester that offers excellent abrasion resistance, UV resistance, and durability. The final construction of core and cover work in balance to provide excellent service life. This construction offers a firm round torque free rope that is designed for high layer spooling on single drum winches.

Features & Benefits

- 1/7th the weight of wire
- High strength
- Low elastic elongation
- Abrasion resistant
- Firm cross section
- Excellent multilayer spooling
- Easy handling
- Durable
- Corrosion resistant
- Neutrally buoyant in seawater

Applications

- Vessel mooring
- Tug mainline
- Tug pendant
- Winch line
- Crane extension pendants
- Tugger winch lines

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)
5/8	16	**2**	**10.7**	15.9	**43,000**	19.5	**48,000**	21.8
3/4	18	**2-1/4**	**15.3**	22.8	**53,000**	24.0	**59,000**	26.8
7/8	22	**2-3/4**	**20.6**	30.6	**80,000**	36.3	**89,000**	40.4
1	24	**3**	**26.8**	39.9	**104,700**	47.5	**117,000**	53.1
1-1/8	28	**3-1/2**	**34.5**	51.4	**126,300**	57.3	**141,000**	63.9
1-1/4	30	**3-3/4**	**42.0**	62.4	**146,600**	66.5	**163,000**	73.9
1-5/16	32	**4**	**47.0**	70.0	**162,600**	73.7	**181,000**	82.1
1-3/8	34	**4-1/8**	**50.9**	75.8	**179,900**	81.6	**200,000**	90.7
1-1/2	36	**4-1/2**	**62.9**	93.7	**212,300**	96.3	**236,000**	107
1-5/8	40	**5**	**71.3**	106.1	**242,600**	110	**270,000**	122
1-3/4	44	**5-1/2**	**82.5**	122.8	**269,300**	122	**299,000**	136
1-7/8	46	**5-5/8**	**92.9**	138.2	**326,100**	148	**362,000**	164
2	48	**6**	**103.8**	154.5	**363,200**	165	**404,000**	183
2-1/8	52	**6-1/2**	**117.3**	174.5	**401,200**	182	**446,000**	202
2-1/4	56	**7**	**135.4**	201.4	**459,200**	208	**510,000**	231

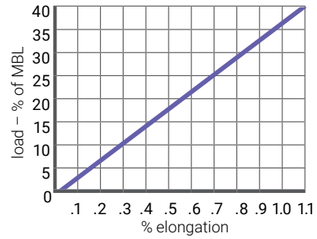
Tensile strengths are determined in accordance with Cordage Institute CI-1500, Test Methods for Fiber Rope and ISO 2307. Published Minimum Tensile Strength (MTS) assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d²) plus 4%. Diameter and circumference size published are nominal and reflect rope size after loading (10 cycles) to 50% of MTS. See reverse side for application and safety information.application and safety information.

Technical Information

Specific gravity	**1.09***
Melting point	**284°F (140°C)**
Critical temp.	**150°F (65°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**4%–5%**
Fiber water absorption	**0%–1%**
UV resistance	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

DZM Composite Double Braid Elongation (%)





GTM Composite Double Braid

MEG4 Compliant
Dyneema® Core, HMPE Jacket, Double Braid

GTM Composite Double Braid ropes have very high strength, are firm with a round profile, and have extremely low stretch. These durable, torque-free synthetic ropes are excellent for replacing steel wire rope in winch applications and are designed to withstand drum compression. MEG4 certified GTM ropes are well suited for use as vessel mooring lines.

GTM Double Braid ropes are constructed with a braided Dyneema® HMPE fiber core. This core is encased in a tightly braided jacket of a new generation HMPE fiber that offers the highest abrasion and cut resistance durability. The final construction of core and cover work in balance to provide excellent service life.

GTM braided rope standard color is orange, but is available with a polyurethane finish in clear or any of five additional colors; black, yellow, red, blue or green.

Features & Benefits
- MEG4 compliant
- Highest strength
- Lowest stretch
- Low creep
- Firm hand
- Torque free

Applications
- Vessel mooring lines
- Winch lines

Type approved product

Nominal Diameter		Size (circ. in)	Load Bearing Linear Density		Linear Density		Line Design Break Force	
inch	mm		lbs/ 100ft	kg/ 100m	lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)
7/8	22	**2-3/4**	**12.6**	18.7	**18.0**	26.8	**83,100**	37.7
1	24	**3**	**16.5**	24.6	**25.3**	37.7	**97,000**	44.0
1-1/8	28	**3-1/2**	**20.4**	30.4	**30.9**	46.0	**120,000**	54.4
1-1/4	30	**3-3/4**	**24.3**	36.2	**38.7**	57.6	**145,000**	65.8
1-5/16	32	**4**	**27.4**	40.8	**43.2**	64.3	**159,000**	72.1
1-3/8	34	**4-1/8**	**30.7**	45.7	**47.1**	70.1	**175,000**	79.4
1-1/2	36	**4-1/2**	**36.9**	54.9	**58.0**	86.3	**202,000**	91.6
1-5/8	40	**5**	**42.9**	63.8	**65.3**	97.2	**228,000**	103.0
1-3/4	44	**5-1/2**	**51.2**	76.2	**75.3**	112.1	**250,000**	113.0

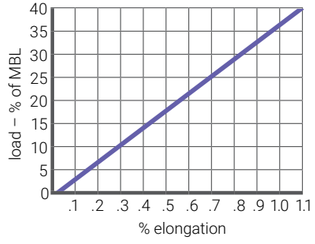
Line Design Break Force (Tensile Strength) is determined in accordance with Cordage Institute CI-1500, Test Methods for Fiber Rope and ISO 2307. Published Line Design Break Force (LDBF) assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d^2) plus 4%. Diameter and circumference size published are nominal and reflect rope size after loading (10 cycles) to 50% of LDBF. See reverse side for application and safety information. A MEG4 Base Design Certificate is provided to verify that the design range for this product has been manufactured, tested, and documented according to the guidelines in Appendix B of the OCIMF Mooring Equipment Guidelines Fourth Edition.

Technical Information

Specific gravity	**0.98***
Melting point	**284°F (140°C)**
Critical temp.	**150°F (65°C)**
Coefficient of friction	**0.12–0.15**
Elongation at break	**2.5–3.5%**
Fiber water absorption	**0–1%**
UV resistance	**excellent**
Wet abrasion	**superior**
Dry abrasion	**superior**
Material Type (core)	**HMPE**
Material Type (jacket)	**HMPE**
Load bearing constr.	**12-strand braid**
Jacketed	**yes**
Floating	**yes**
Rotating	**no**

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

GTM Composite Double Braid Elongation (%)





GZM Composite Double Braid

HMPE Core, HMPE Jacket, Double Braid

GZM Composite Double Braid ropes have very high strength, are firm with a round profile, and have extremely low stretch. These durable, torque-free synthetic ropes are excellent for replacing steel wire rope in winch applications and are designed to withstand drum compression. GZM ropes can be used in multiple applications such as vessel mooring lines for Articulated Tug & Barges (ATB's), Gilson winch lines used in commercial fishing, as well as helicopter long lines.

GZM Double Braid ropes are constructed with a braided HMPE fiber core. This core is encased in a tightly braided jacket of a new generation HMPE fiber that offers the highest abrasion and cut resistance durability.* The final construction of core and cover work in balance to provide excellent service life.

GZM braided rope standard color is orange, but is available with a polyurethane finish in clear or any of five additional colors; black, yellow, red, blue or green.

Features & Benefits
- High strength
- Lowest stretch
- Low creep
- Firm hand
- Torque free

Applications
- Vessel mooring lines
- Winch lines
- Tug mainlines
- Tug pendants
- Recreational vehicle winch lines
- Utility winch and pulling lines
- Theatrical rigging

Nominal Diameter		Size (circ. in)	Approximate Weight		Minimum Tensile Strength Spliced Rope		Minimum Tensile Strength Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
5/8	16	**2**	**10.2**	15.1	**43,000**	19.5	**48,000**	21.8
3/4	18	**2-1/4**	**14.3**	21.2	**53,000**	24.0	**59,000**	26.8
7/8	22	**2-3/4**	**18.9**	28.1	**80,000**	36.3	**89,000**	40.4
1	24	**3**	**25.3**	37.7	**104,700**	47.5	**117,000**	53.1
1-1/8	28	**3-1/2**	**31.6**	47.0	**126,300**	57.3	**141,000**	63.9
1-1/4	30	**3-3/4**	**38.7**	57.5	**146,600**	66.5	**163,000**	73.9
1-5/16	32	**4**	**43.1**	64.1	**162,600**	73.7	**181,000**	82.1
1-3/8	34	**4-1/8**	**47.0**	69.9	**179,900**	81.6	**200,000**	90.7
1-1/2	36	**4-1/2**	**57.9**	86.1	**212,300**	96.3	**236,000**	107
1-5/8	40	**5**	**66.6**	99.1	**242,600**	110	**270,000**	122
1-3/4	44	**5-1/2**	**75.7**	112.7	**269,300**	122	**299,000**	136
1-7/8	46	**5-5/8**	**87.3**	129.8	**326,100**	148	**362,000**	164
2	48	**6**	**98.6**	146.6	**363,200**	165	**404,000**	183
2-1/8	52	**6-1/2**	**110.3**	164.2	**401,200**	182	**446,000**	202
2-1/4	56	**7**	**128.2**	190.8	**459,200**	208	**510,000**	231

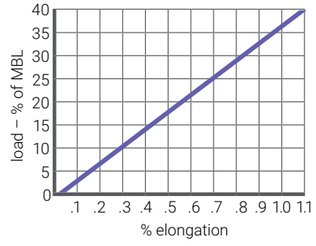
Tensile strengths are determined in accordance with Cordage Institute CI-1500, Test Methods for Fiber Rope and ISO 2307. Published Minimum Tensile Strength (MTS) assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload (200d^2) plus 4%. Diameter and circumference size published are nominal and reflect rope size after loading (10 cycles) to 50% of MTS. See reverse side for application and safety information.

Technical Information

Specific gravity	**0.98***
Melting point	**284°F (140°C)**
Critical temp.	**150°F (65°C)**
Coefficient of friction	**0.12–0.15**
Elongation at break	**2.5–3.5%**
Fiber water absorption	**0–1%**
UV resistance	**excellent**
Wet abrasion	**superior**
Dry abrasion	**superior**

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

GZM Composite Double Braid Elongation (%)



** GZM Composite ropes can also be designed with materials other than HMPE for jacketing depending on application. Linear density & external fiber properties will change depending on jacketing material but the strength will remain the same on a per size basis. Please contact Cortland for further information.*

Tufflex® Lite Mooring Tails



Mooring tails are commonly utilized with high performance mooring lines to provide elasticity in the mooring system. This elasticity helps maintain loads at acceptable levels for the deck equipment and operational limits. Tails should be specified based on overall vessel mooring system design requirements. Tail breaking strength is defined as Tail Design Breaking Force and are specified in accordance with OCIMF's Mooring Equipment Guidelines (MEG4). Tails are provided as fabricated units at 11m and 22m overall length, as standard. If your vessel requires unique lengths, please contact Cortland International to discuss appropriate solutions.

Each of Cortland's tail products offer specific features and benefits that address the trade off between strength, durability, elasticity and cost. They are all MEG4 approved and supplied with Tail Base Design Certificates upon request.

Size Dia.		Tail Linear Density (TLD)	11m tail weight (kg)	Minimum Break Force		Tail Design Break Force (TDBF)	
				Unspliced		Spliced	
inch	mm			Ton	kN	Ton	kN
2	48	**1.15**	16.4	**44.4**	435	**40.0**	392
2-1/16	50	**1.24**	17.9	**47.9**	470	**43.1**	423
2-1/8	52	**1.34**	19.4	**51.6**	506	**46.4**	455
2-1/4	56	**1.56**	22.7	**59.2**	580	**53.3**	523
2-1/2	60	**1.80**	26.4	**67.4**	661	**60.7**	595
2-5/8	64	**2.04**	30.1	**75.9**	744	**68.3**	670
2-3/4	68	**2.30**	34.2	**85.2**	835	**76.7**	752
3	72	**2.57**	38.6	**91.6**	898	**82.4**	808
3-1/8	76	**2.87**	43.5	**103.4**	1014	**93.1**	913
3-1/4	80	**3.19**	48.6	**116.0**	1137	**104.4**	1024
3-3/8	84	**3.52**	54.0	**127.7**	1252	**114.9**	1126
3-5/8	88	**3.86**	59.7	**140.0**	1373	**126.0**	1235
3-3/4	92	**4.21**	65.6	**152.5**	1495	**137.3**	1346
4	96	**4.58**	71.8	**165.5**	1623	**149.0**	1461
4-1/8	100	**4.98**	78.7	**178.9**	1754	**161.0**	1578
4-1/4	104	**5.40**	86.0	**192.8**	1890	**173.5**	1701
4-1/2	108	**5.83**	93.3	**207.5**	2034	**186.8**	1831
4-5/8	112	**6.27**	101.2	**222.7**	2183	**200.4**	1965
4-3/4	116	**6.73**	109.3	**238.6**	2339	**214.7**	2105
5	120	**7.20**	117.8	**255.1**	2501	**229.6**	2251

Additional sizes available upon request. Please visit cortlandinternational.com or contact your sales representative for full product data sheets.

Tufflex® Plus Mooring Tails



Tufflex® Plus mooring tails are an exceptional choice for mooring applications, offering a high strength-to-weight ratio that ensures durability and reliability in demanding marine environments.

These mooring tails are crafted from a specialized blend of polyester and copolymer, combining the best properties of both materials to provide superior performance. Designed specifically for use as a mooring tail, it introduces the necessary elongation into your mooring configuration, enhancing shock absorption and reducing stress on the main mooring line.

Tufflex Plus mooring tails are available in standard lengths of 11 and 22 meters. This design allows for easy and secure connection to the main line using a cow hitch, ensuring a quick and efficient mooring setup. With its combination of strength, flexibility, and resistance to abrasion, Tufflex Plus mooring tails provide a reliable solution for optimizing mooring performance and extending the lifespan of mooring systems.

Size Dia.		Tail Linear Density (TLD)	11m Tail weight (kg)	Minimum Break Force		Tail Design Break Force (TDBF)	
				Unspliced		Spliced	
inch	mm	kg/m		Ton	kN	Ton	kN
2	48	**1.41**	20.2	**62.0**	608	**55.8**	547
2-1/16	50	**1.53**	21.9	**67.6**	663	**60.8**	596
2-1/8	52	**1.66**	24.0	**73.4**	720	**66.1**	648
2-5/16	56	**1.92**	28.0	**84.6**	829	**76.1**	746
2-1/2	60	**2.21**	32.4	**95.8**	939	**86.2**	845
2-5/8	64	**2.51**	37.1	**107.8**	1057	**97.0**	951
2-3/4	68	**2.83**	42.2	**122.1**	1197	**109.9**	1077
3	72	**3.18**	47.8	**137.4**	1347	**123.7**	1213
3-1/8	76	**3.54**	53.6	**152.1**	1491	**136.9**	1342
3-1/4	80	**3.92**	59.7	**167.4**	1641	**150.7**	1477
3-5/16	84	**4.32**	66.3	**181.2**	1776	**163.1**	1599
3-5/8	88	**4.75**	73.5	**195.0**	1912	**175.5**	1721
3-3/4	92	**5.19**	80.8	**212.2**	2080	**191.0**	1873
4	96	**5.65**	88.6	**230.0**	2255	**207.0**	2029
4-1/8	100	**6.13**	96.9	**249.6**	2447	**224.6**	2202
4-1/4	104	**6.63**	105.5	**270.0**	2647	**243.0**	2382

Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload (200d^2) plus 5%. Additional sizes available upon request. Please visit cortlandinternational.com or contact your sales representative for full product data sheets.

Nylotuf Plus Mooring Tails



Nylotuf mooring tails are high-performance polyamide (nylon) ropes specifically designed to enhance mooring configurations by providing exceptional elongation and shock absorption. Due to their ability to stretch under load, they are particularly well-suited for use in open and exposed ports where significant swell and dynamic forces are present.

By effectively dissipating energy, Nylotuf mooring tails help reduce stress on the main mooring lines and the vessel, minimizing the risk of sudden load surges. These mooring tails are available in standard lengths of 11 and 22 meters. They comply with the OCIMF MEG 4 guidelines, which emphasize safety and reliability in mooring operations.

By incorporating Nylotuf tails into a mooring system, operators can significantly enhance safety for the crew while improving the overall stability of the vessel during berthing. With their superior shock absorption, durability, and compliance with industry best practices, Nylotuf mooring tails are an essential addition to mooring configurations, providing both performance and peace of mind in challenging maritime environments.

Size Dia.		Linear Density	11m tail weight (kg)	Minimum Break Force							
				DRY				WET			
				Unspliced		Spliced-TDBF		Unspliced		Spliced-TDBF	
inch	mm	kg/m		Kgf	Ton	Kgf	Ton	Kgf	Ton	Kgf	Ton
2	48	1.42	20.4	58700	59	53000	53	50000	50	45000	45
2-1/8	52	1.69	24.4	70000	70	63000	63	60000	60	54000	54
2-1/4	54	1.83	26.6	75000	75	68000	68	63300	63	57000	57
2-5/16	56	1.93	28.1	79500	80	72000	72	67800	68	61000	61
2-3/8	58	2.07	30.3	85000	85	77000	77	72200	72	65000	65
2-1/2	60	2.22	32.6	91200	91	82000	82	77800	78	70000	70
2-15/32	62	2.36	34.8	98000	98	88000	88	83300	83	75000	75
2-5/8	64	2.52	37.3	105500	106	95000	95	90000	90	81000	81
2-39/50	66	2.72	40.4	114000	114	103000	103	96700	97	87000	87
2-3/4	68	2.85	42.5	119000	119	107000	107	101100	101	91000	91
2-3/4	70	3.01	45.0	125000	125	113000	113	106700	107	96000	96
3	72	3.19	47.9	130600	131	118000	118	111100	111	100000	100
3-1/8	76	3.56	53.7	145000	145	131000	131	123300	123	111000	111
3-1/4	80	3.94	60.0	160000	160	144000	144	135500	136	122000	122
3-5/16	82	4.14	63.3	167000	167	150000	150	142200	142	128000	128
3-3/8	84	4.35	66.8	175000	175	158000	158	149000	149	134000	134
3-1/2	86	4.56	70.1	183000	183	165000	165	155600	156	140000	140
3-5/8	88	4.71	72.8	192000	192	173000	173	163300	163	147000	147
4	96	5.74	90.0	218000	218	196000	196	185600	186	167000	167
4-1/8	102	6.28	99.6	238000	238	214000	214	202200	202	182000	182
4-1/4	104	6.53	103.9	248000	248	223000	223	211100	211	190000	190
4-1/2	108	7.18	115.1	272000	272	245000	245	231200	231	208000	208
4-5/8	112	7.80	125.9	296000	296	266000	266	251000	251	226000	226

Additional sizes available upon request. Please visit cortlandinternational.com or contact your sales representative for full product data sheets.



DZ-Tug Composite Double Braid

HMPE Core, Polyester Jacket, Double Braid

DZ-Tug ropes provide high strength, low stretch and superior abrasion resistance in a round jacketed construction. The ropes are constructed with a braided HMPE core. This core is encased in a braided jacket of polyester fiber that offers excellent abrasion resistance and durability.

DZ-Tug ropes can be used in a multitude of applications where a high strength, and round torque free rope is desired. DZ-Tug can be used in towing applications, harbor assist main lines, crane extension pendants, and general marine working lines. These ropes are available with a polyurethane finish in clear or any of six colors and are designed to offer a versatile high strength jacketed rope.

Features & Benefits

- High strength
- Lowest stretch
- Low creep
- Firm hand
- Torque free

Applications

- Harbor assist main lines
- Towing lines
- Vessel mooring lines

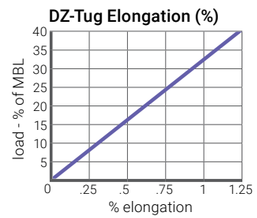
Nominal Diameter		Size (circ in.)	Approximate Weight		Minimum Tensile Strength Spliced Rope		Minimum Tensile Strength ISO Unspliced Rope	
inch	mm		lbs/ 100ft	kg/ 100m	lbs	MT (tonnes)	lbs	MT (tonnes)
ABS and DNV Type Approved Sizes								
3/4	18	2-1/4	20.9	31.0	47,800	21.7	54,000	24.5
7/8	22	2-3/4	23.1	34.4	61,800	28.0	69,000	31.3
1	24	3	32.7	48.7	74,000	33.6	83,000	37.6
1-1/8	28	3-1/2	34.1	50.8	84,300	38.2	94,000	42.6
1-1/4	30	3-3/4	38.4	57.1	105,000	47.6	117,000	53.1
1-5/16	32	4	50.0	74.5	137,000	62.1	153,000	69.4
1-1/2	36	4-1/2	63.1	93.9	157,000	71.2	175,000	79.4
1-5/8	40	5	71.7	106.7	176,000	79.8	196,000	88.9
1-3/4	44	5-1/2	88.4	131.6	215,000	97.5	239,000	108
2	48	6	98.5	146.6	221,400	100	246,000	112
2-1/8	52	6-1/2	110.9	165.1	245,000	111	272,000	123
2-1/4	56	7	127.9	190.3	284,300	129	316,000	143
2-1/2	60	7-1/2	152.8	227.4	423,900	192	471,000	214
2-5/8	64	8	170.3	253.4	470,100	213	522,000	237
2-7/8	70	8-5/8	207.8	309.1	569,400	258	633,000	287
3	72	9	229.8	342.0	630,300	286	700,000	317

Tensile Strengths are determined in accordance with Cordage Institute CI-1500, Test Methods for Fiber Rope and ISO 2307. Published Minimum Tensile Strength (MTS) assumes spliced eye terminations at each end of the rope. Weights actually calculated at linear density under stated preload ($200d^2$) plus 4%. Diameter and circumference size published are nominal and reflect rope size after loading (10 cycles) to 50% of MTS. See reverse side for application and safety information.

Technical Information

Specific gravity	**1.13***
Melting point	**284°F (140°C)**
Critical temp.	**150°F (65°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**3%–4%**
Fiber water absorption	**0–1%**
UV resistance	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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





Polyester 12- and 12x12 Plait

Polyester 12- and 12x12 Plait provides high strength, low stretch and excellent abrasion resistance in a unique single braid construction. This construction is easily spliced using a standard tuck splice and is 30% stronger than three strand or 8 plait polyester. Its torque free braided construction provides easy handling and prevents kinks and hockles.

Polyester 12- and 12x12 Plait is delivered standard with an overlay marine finish and a spliceable polyurethane finish in clear. Other colors are available upon request.

Features & Benefits
- Low stretch
- High strength
- Soft hand
- Torque free
- Easy splicing
- Meets MIL-R-24750

Applications
- Tug working lines
- Mooring pendants
- Shock lines

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)
12 Plait								
5/8	16	**2**	**12.2**	18.1	**12,100**	5.5	**13,400**	6.1
3/4	18	**2-1/4**	**15.9**	23.6	**15,800**	7.2	**17,600**	8.0
7/8	22	**2-3/4**	**26.3**	39.1	**24,200**	11.0	**26,900**	12.2
1	24	**3**	**33.0**	49.1	**27,500**	12.5	**30,600**	13.9
1-1/8	28	**3-1/2**	**39.7**	59.1	**35,500**	16.1	**39,400**	17.9
12x12 Plait								
1-1/4	30	**3-3/4**	**50.6**	75.3	**42,100**	19.1	**46,800**	21.2
1-5/16	32	**4**	**58.7**	87.3	**48,200**	21.9	**53,600**	24.3
1-1/2	36	**4-1/2**	**66.8**	99.4	**59,600**	27.0	**66,200**	30.0
1-5/8	40	**5**	**84.1**	125.1	**72,200**	32.8	**80,200**	36.4
1-3/4	44	**5-1/2**	**96.0**	142.8	**84,400**	38.3	**93,800**	42.6
2	48	**6**	**121.9**	181.3	**101,000**	45.8	**112,200**	50.9
2-1/8	52	**6-1/2**	**138.6**	206.3	**119,000**	54.0	**132,200**	60.0
2-1/4	56	**7**	**155.8**	231.9	**137,000**	62.2	**152,200**	69.1
2-1/2	60	**7-1/2**	**185.9**	276.6	**163,000**	74.0	**181,100**	82.2
2-5/8	64	**8**	**212.9**	316.7	**179,000**	81.2	**198,900**	90.2
2-3/4	68	**8-1/2**	**244.9**	364.4	**202,000**	91.7	**224,400**	101.8
3	72	**9**	**267.4**	397.8	**233,000**	105.7	**258,900**	117.5
3-1/4	80	**10**	**325.3**	484.0	**282,000**	127.9	**313,300**	142.2
3-1/2	84	**10-1/2**	**389.5**	579.6	**322,000**	146.0	**357,800**	162.0
3-5/8	88	**11**	**398.4**	592.9	**340,000**	154.3	**377,800**	171.4
4	96	**12**	**505.9**	752.7	**409,000**	185.6	**454,400**	206.2
4-1/8	104	**12-1/2**	**541.0**	805.1	**444,000**	201.0	**493,300**	224.0
4-1/4	108	**13**	**585.9**	871.9	**467,000**	212.0	**518,900**	235.0

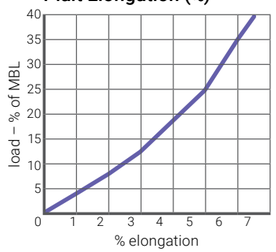
Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload ($200d^2$) plus 5%. See reverse side for application and safety information. *Please note that the Minimum Tensile Strengths of black Polyester 12- and 12x12 Plait products are normally 15% below published specifications.*

Technical Information

Specific gravity	**1.38***
Melting point	**482°F (250°C)**
Critical temp.	**350°F (177°C)**
Coefficient of friction	**0.12–0.15***
Elongation at break	**15–20%**
Fiber water absorption	**0–1%**
UV resistance	**excellent**
Wet abrasion	**excellent**
Dry abrasion	**excellent**

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

Polyester 12- and 12x12 Plait Elongation (%)



Polyester Double Braid

Polyester Double Braid provides an excellent combination of high strength, low stretch, excellent weathering and easy handling. Of all the popular fibers polyester has the best weathering characteristics and the best wet abrasion resistance. Polyester Double Braid is identified with one external black marker.

Polyester Double Braid is delivered standard with an overlay marine finish and is available on special order with a spliceable polyurethane finish in clear or any of six colors.

Features & Benefits
- Low stretch
- High strength
- Soft hand
- Torque free
- Excellent wet strength
- Meets MIL-DTL-24677

Applications
- Winch lines
- Utility pulling lines
- Towing lines
- Offshore anchor and lifting lines
- Arborist bull ropes
- Theatrical rigging lines

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)
1/4	6	**3/4**	**2.4**	3.6	**2,400**	1.1	**2,700**	1.2
5/16	8	**1**	**3.6**	5.4	**3,600**	1.6	**4,000**	1.8
3/8	9	**1-1/8**	**4.8**	7.1	**4,800**	2.2	**5,300**	2.4
7/16	11	**1-1/4**	**6.3**	9.4	**6,300**	2.9	**7,000**	3.2
1/2	12	**1-1/2**	**8.6**	12.8	**8,400**	3.8	**9,300**	4.2
9/16	14	**1-3/4**	**11.1**	16.5	**10,750**	4.9	**11,900**	5.4
5/8	16	**2**	**13.1**	19.5	**12,300**	5.6	**13,700**	6.2
3/4	18	**2-1/4**	**18.8**	28.0	**17,400**	7.9	**19,300**	8.8
7/8	22	**2-3/4**	**25.6**	38.1	**24,000**	10.9	**26,700**	12.1
1	24	**3**	**33.5**	49.9	**31,200**	14.2	**34,700**	15.7
1-1/8	28	**3-1/2**	**42.4**	63.1	**39,500**	17.9	**43,900**	19.9
1-1/4	30	**3-3/4**	**52.3**	77.8	**48,100**	21.8	**53,400**	24.2
1-5/16	32	**4**	**57.8**	86.0	**53,100**	24.1	**59,000**	26.8
1-1/2	36	**4-1/2**	**75.4**	112.2	**64,300**	29.2	**71,400**	32.4
1-5/8	40	**5**	**88.2**	131.3	**77,800**	35.3	**86,400**	39.2
1-3/4	44	**5-1/2**	**103.0**	153.3	**89,200**	40.5	**99,100**	45
2	48	**6**	**134.0**	199.4	**110,000**	50	**122,200**	55
2-1/8	52	**6-1/2**	**151.0**	224.7	**124,000**	56	**137,800**	63
2-1/4	56	**7**	**169.0**	251.5	**141,000**	64	**156,700**	71
2-1/2	60	**7-1/2**	**209.0**	311.0	**170,000**	77	**188,900**	86
2-5/8	64	**8**	**231.0**	343.8	**186,000**	84	**206,700**	94
2-3/4	68	**8-1/2**	**265.0**	394.4	**206,000**	94	**228,900**	104
3	72	**9**	**301.0**	447.9	**237,000**	108	**263,300**	120
3-1/4	80	**10**	**354.0**	526.8	**292,000**	133	**324,400**	147
3-5/8	88	**11**	**440.0**	654.8	**348,000**	158	**386,700**	176
4	96	**12**	**536.0**	797.7	**401,000**	182	**445,600**	202
4-1/4	104	**13**	**605.0**	900.4	**454,000**	206	**504,400**	229

Tensile Strengths are determined in accordance with Cordage Institute 1500, Test Methods for Fiber Rope. Weights are calculated at linear density under standard preload ($200d^2$) plus 4%. See reverse side for application and safety information. *Please note that the Minimum Tensile Strengths of black Polyester Double Braid products are normally 15% below published specifications.*

Wear Protection
FOR EXTENDED SERVICE LIFE OF FIBER ROPES

Cortland International's high performance ropes are manufactured using some of the most cut and abrasion resistant fibers available in the world today. Many users benefit from the ability to inspect a non-jacketed rope, such as Plasma®. However, when extra defense from heat, the elements, cutting, abrasion, or ingress of dirt, mud or particulates is needed, added wear protection can provide the solution. We offer several wear protection options as a sacrificial layer of protection, increasing the service life of a rope or sling and ensuring a safe and successful operation.

Each application has its own characteristic requirements. To address the various issues, Cortland International offers several different wear protection options which range in protective quality, weight, and cost. Contact your local Cortland technical sales representative or distributor for the proper wear protection for your specific application.

Wear gear protection types:
- SX
- Cortland Cage
- Asgard
- DXC
- XT
- PNW tubular
- PNW with hook-and-clasp securement

SX
SX wear protection is designed to offer the highest cut and abrasion resistance protection to your rope. Manufactured with HMPE (High Modulus Polyethylene), the SX wear protection is a braided tubular structure offering 100% protection to the rope. The HMPE fiber is lightweight, floats and has excellent cut resistance. SX wear protection does not absorb water and can be splice-terminated into Cortland International braided ropes.

Key benefits of SX wear protection:
- Superior wet & dry protection
- Lightweight
- Flexible
- Cut resistant
- HMPE fiber
- Low coefficient of friction
- UV resistant
- Easy to handle



Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
1/4–3/8	6–9 mm	–	SX10
1/2–5/8	12–16 mm	SX10	SX14
3/4–7/8	18–22 mm	SX14	SX16
1–1-1/16	24–26 mm	SX16	SX18
1-1/8–1-1/4	28–30 mm	SX18	SX21
1-5/16–1-1/2	32–36 mm	SX21	SX32
1-5/8	40 mm	SX21	SX42
1-3/4–2-1/8	44–52 mm	SX32	SX42
2-1/4–2-3/4	56–68 mm	SX32	SX52
3	72 mm	SX42	SX64
3-1/8–3-1/2	76–84 mm	SX52	SX64
3-5/8–4	88–96 mm	SX64	SX72
4-1/8–4-1/4	100–104 mm	SX72	SX72

WEAR PROTECTION OPTIONS

Cortland Cage
The **Cortland Cage** solution combines the lightweight, abrasion resistant, and non-water-absorbing properties of HMPE fiber in a braided cover sleeve. Cortland Cage can be secured in place by splice-termination or heavy duty whipping. The open braid pattern allows inspection of Plasma® 12x12 and reduces the total weight of the wear protection. Cortland Cage offers excellent cut and abrasion resistance of all braided wear protection. In addition a proprietary polyurethane coating provides added protection in challenging marine environments.

Key benefits of Cortland Cage:
- Extra protection against cutting and abrasion
- Open braid pattern allows inspection of rope
- Proprietary polyurethane coating
- Lightweight and floats



Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
3/4–1-1/2	18–36 mm	SCAGE18	–
1–1-3/4	24–44 mm	SCAGE26	–
1-1/2–2-3/4	36–68 mm	SCAGE34	–
2-1/4–3-1/2	56–84 mm	SCAGE48	–

Asgard
Asgard wear protection is typically used for protection of lifting or mooring ropes and provides outstanding durability and resistance towards harsh operating conditions. The design features a strong, lightweight construction which is easy to install and retrofit on existing items. Asgard wear protection is designed according to a given diameter of the item to be protected and is provided in lengths according to client specifications.

Asgard wear protection is made from HMPE (High Modulus Polyethylene) and PNW (polyester and/or nylon) fibers in a woven, laminated and PU-coated construction and built in a layered design. The fibers utilized are the toughest of the traditional synthetic fibers. HMPE, for example, is used in personal armor products and PNW is used by the military for belts and webbing. Asgard wear protection can be delivered in a flat construction for protection of webbing, or in a circular construction, for use on mooring ropes for instance.

Asgard wear protection can be custom fabricated to other dimensions and configurations per customer requirements.

Key benefits of Asgard:
- Available with hook-and-clasp, or lace-on closures
- Custom fabricated to fit rope diameter and length requirements



Rope Size (diameter)		Part Number		
inches	mm	In Eye	Over Splice	Over Grommet
1/4–3/8	6–9 mm	AS-1.0	AS-1.0	AS-1.5
1/2–5/8	12–16 mm	AS-1.0	AS-1.5	AS-2.0
3/4–7/8	18–22 mm	AS-1.0	AS-1.5	AS-2.5
1	24 mm	AS-1.5	AS-2.0	AS-3.0
1-1/4	30 mm	AS-2.0	AS-2.0	AS-3.5
1-5/16–1-1/2	32–36 mm	AS-2.0	AS-2.5	AS-4.0
1-5/8–1-3/4	40–44 mm	AS-2.5	AS-3.0	AS-4.5
1-3/4–6	44–152 mm	AS-2.5	AS-3.5	AS-5.0
7	177 mm	AS-2.5	AS-3.5	AS-6.0
8	203 mm	AS-3.0	AS-4.5	AS-7.0
9–10	228–254 mm	AS-3.5	AS-5.0	AS-9.0
11–13	279–330 mm	AS-5.0	AS-7.0	–

WEAR PROTECTION OPTIONS

DXC

The DXC wear protection is a tightly braided tubular polyester sleeve with proprietary marine polyurethane coating for use in extreme applications. Excellent choice for placement in the eye or body of sling; DXC sleeves can be fabricated to be free-floating or fixed in place. The DXC sleeve covers rope sling sizes from 1/4" (6 mm) diameter through 4-1/4" (104 mm) diameter. Other sizes and colors available upon request.



Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
1/4–3/8	6–9 mm	—	DX10
1/2–5/8	12–16 mm	DX10	DX14
3/4–7/8	18–22 mm	DX14	DX16
1–1-1/16	24–26 mm	DX16	DX18
1-1/8–1-1/4	28–30 mm	DX18	DX21
1-5/16–1-1/2	32–36 mm	DX21	DX32
1-5/8	40 mm	DX21	DX42

Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
1-3/4–2-1/8	44–52 mm	DX32	DX42
2-1/4–2-3/4	56–68 mm	DX32	DX52
3	72 mm	DX42	DX64
3-1/8–3-1/2	76–84 mm	DX52	DX64
3-5/8–4	88–96 mm	DX64	DX72
4-1/8–4-1/4	100–104 mm	DX72	DX72

XT

XT wear protection is a tightly braided tubular polyester wear protection sleeve with proprietary heavy marine polyurethane coating for use in extreme applications. XT sleeves can be fabricated to be free-floating, or fixed in place. It is an excellent choice for eye terminations or selected area body placement, braid-spliced or seized in place. This wear protection option is not as flexible as SX or PNW.



Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
1/4–3/8	6–9 mm	—	XT10
1/2–5/8	12–16 mm	XT14	XT14
3/4–7/8	18–22 mm	XT14	XT16
1–1-1/16	24–26 mm	XT16	XT18
1-1/8–1-1/4	28–30 mm	XT18	XT21
1-5/16–1-1/2	32–36 mm	XT21	XT32
1-5/8	40 mm	XT21	XT42

Rope Size (diameter)		Part Number	
inches	mm	In Eye	Over Splice
1-3/4–2-1/8	44–52 mm	XT32	XT42
2-1/4–2-3/4	56–68 mm	XT32	XT52
3	72 mm	XT42	XT64
3-1/8–3-1/2	76–84 mm	XT52	XT64
3-5/8–4	88–96 mm	XT64	XT72
4-1/8–4-1/4	100–104 mm	XT72	XT72

WEAR PROTECTION OPTIONS

PNW tubular

PNW is a woven fiber material and is the most commonly used protection for abrasion. This wear protection is a permanent installation. PNW wear protection can be customized to meet the needs of any application. Standard colors are black or orange.





Rope Size (diameter)		Part Number		
inches	mm	In Eye	Over Splice	Over Grommet
1/4–3/8	6–9 mm	51650	51623	51623
1/2–5/8	12–16 mm	51623	51570	51570
3/4–7/8	18–22 mm	51231	51232	51232
1–1-1/16	24–26 mm	51232	51234	51234
1-1/8–1-1/4	28–30 mm	51233	51477	51477
1-5/16–1-1/2	32–36 mm	51446	51235	51235
1-5/8	40 mm	51234	51236	51236
1-3/4–2-1/8	44–52 mm	51477	51237	51237
2-1/4–2-3/4	56–68 mm	51236	51692	51692
3	72 mm	50403	—	
3-1/8–3-1/2	76–84 mm	51692	—	
3-5/8–4	88–96 mm	—	—	
4-1/8–4-1/4	100–104 mm	—	—	

PNW with hook-and-clasp securement

PNW is a woven fiber material and is the most commonly used protection for abrasion. PNW protection can be customized to meet the needs of any application. This is a removable or replaceable wear protection and is available in black or orange.



Rope Size (diameter)		Part Number		
inches	mm	In Eye	Over Splice	Over Grommet
1/4–3/8	6–9 mm	custom	SL-1.0	SL-1.5
1/2–5/8	12–16 mm	SL-1.0	SL-1.5	SL-2.0
3/4–7/8	18–22 mm	SL-1.5	SL-1.75	SL-2.5
1–1-1/16	24–26 mm	SL-1.75	SL-2.5	SL-3.5
1-1/8–1-1/4	28–30 mm	SL-25	SL-3.0	SL-3.5
1-5/16–1-1/2	32–36 mm	SL-2.5	SL-3.0	SL-4.0
1-5/8	40 mm	SL-3.0	SL-4.0	SL-5.0
1-3/4–2-1/8	44–52 mm	SL-3.5	SL-4.5	SL-6.0
2-1/4–2-3/4	56–68 mm	SL-4.5	SL-6.0	SL-8.0
3	72 mm	SL-5.0	SL-7.0	custom
3-1/8–3-1/2	76–84 mm	SL-6.5	SL-8.0	custom
3-5/8–4	88–96 mm	SL-8.0	custom	custom
4-1/8–4-1/4	100–104 mm	custom	custom	custom



Emergency Tow System

Easy, lightweight, ready-to-deploy tow lines

Designed for fast response in critical situations, Cortland's Emergency Tow System (ETS) provides a complete, ready-to-use towing and recovery solution in one simple package. The ETS-450 and ETS-900 include all essential components for emergency deployment: a Plasma® tow line with thimbled eyes, an UHMWPE floating pick-up line, and an automatically activated lighted buoy; all neatly stored in a rugged, weatherproof container for secure deck mounting and immediate access.

Tow Line
Cortland's floating tow lines feature a soft, torque-free braided construction with a high-visibility urethane coating for safe, reliable handling. Unlike Kevlar® lines, they do not require oversized radius chocks or fairleads and can be used with standard towing hardware just like conventional towing hawsers.

ETS-450: 56 mm dia. (7" circ.) x 76 m (250 ft) of Plasma® 12-Strand
ETS-900: 80 mm dia. (10" circ.) x 91 m (300 ft) of Plasma® 12-Strand



Minimum Break Strengths:
ETS-450: 204 Te (450,000 lbs) — meets requirements for tankers under 50,000 DWT
ETS-900: 407 Te (900,000 lbs) — meets requirements for tankers over 50,000 DWT

Pickup Line
The included pick-up line is a high-visibility UHMWPE 12-Strand floating rope designed for easy retrieval and dependable performance.
- 22 mm (7/8") dia. x 122 m (400 ft)
- Minimum break strength: 20 Te (45,000 lbs)

Lighted Buoy
Each package includes an automatically activated lighted buoy that is compact enough to pass through any chock while still accommodating the tow line thimbles, ensuring visibility and easier recovery in low-light or emergency conditions.

Storage Container
All components are packed inside a heavy-duty polypropylene storage container that is ready for deck attachment. The tow line is carefully flaked into the box for quick, controlled deployment and easy connection when time matters most.

Features
- Complete assembly includes:
  - Plasma® tow line
  - UHMWPE floating pick-up line
  - Automatically activated lighted buoy
- Lightweight synthetic system for easier handling and faster deployment
- Ready-to-mount weatherproof storage container
- Tow line is pre-flaked for rapid, efficient deployment
- Designed to comply with 1994 SOLAS Convention requirements
- Available system weights:
  - ETS-450: 550 lbs
  - ETS-900: 1,100 lbs

Email contact@cortlandinternational.com for an initial discussion, or visit us online at cortlandinternational.com.

Environmental, Social and Governance



Our ESG Approach

Our ESG strategy is an integral part of our long-term, globally aligned strategic imperatives and operating priorities. It is deeply embedded in our vision, mission and values as an organization. We continuously seek to identify ways to broaden our commitments to ESG efforts and make progress on our goal of making life in our operations, in our communities, and on the planet better today and in the future. Through our engagement with stakeholders, we aim to seek diverse perspectives and foster an environment where we take the time to listen first, be present and strive to make others feel welcomed, valued, heard and respected.

Sustainable Products &

Operations

Committing to reducing emissions from our existing operations and investing in future lower-carbon energies. This ensures our journey to net-zero emissions is both transparent and effective and creates shared value throughout the product life cycle.

Supporting Our employees & Our Communities

Bringing purposeful innovation to our consumers and improving the environment for our employees and our communities.

Doing the Right Thing

Holding ourselves accountable and maintaining robust policies, procedures, and systems to ensure we live by our values.

WHO WE ARE

CORTLAND INTERNATIONAL™

Cortland International brings together industry leaders with decades of experience delivering superior quality synthetic rope products and customized solutions that provide unparalleled value for our customers. As the largest rope manufacturer in the world, we're growing, expanding our extensive portfolio, and accelerating innovation to create a safer, more secure, and sustainable way to work.

Our 30+ years of continuous innovation is fueled by deep technical expertise; delivering customized high-performance synthetic solutions that help solve the most complex challenges across diverse markets.

Inspired solutioneers, we are meeting the needs of diverse industries, connecting people with innovative, future ready products and solutions that make work, play and everyday life easier and safer.

We welcome your inquiries, email us at contact@cortlandinternational.com.

TUFROPES

Decades of experience in customer-centric rope and netting product development, Tufropes has one of the largest vertically integrated manufacturing facilities in the world with the capacity of 70,000 MT p.a. across 7 facilities and over 35,000 SKUs, delivered in 70+ countries.

CORTLAND INDUSTRIAL

A recognized industry-leader, with deep technical expertise, Cortland has been defining customized synthetic rope solutions for more than 30 years, that are stronger than steel, last longer, are safer by design and over 80% lighter than steel wire rope.



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Anacortes, WA – USA

Houston, TX – USA

Vadodara-Gujarat – India

Indore-M.P Unit – India

Masat-Silvassa Unit – India

Mumbai – India

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contact@cortlandinternational.com



Marine & Shipping



Fishing & Aquaculture



Offshore



Sports Nets



Heavy Lifting

BUILDING POWERFUL COLLABORATIONS

Over 1,000 customers worldwide trust us to help grow their business.

CORTLAND INTERNATIONAL™

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