

COTESI[®]

MARINE DIVISION



COTESI in the world



TOWING



SuperTow

SUPERTOW was specially designed for Mooring and Towing applications. Made from high tenacity (HT) polyester, its construction of multi parallel cores maximizes rope breaking strength whilst the compact braided protective cover, comprise of several double twisted yarns, enhances life span by adding to the rope excellent abrasion resistance properties. SUPERTOW is spliced with the new CS3 splice, developed in-house by our rigging department. This new technique maximizes rope LDBF (Line Design Breaking Force). Eyes are customized to customer needs and are always protected with coated Pro-Tech polyester and cordura covers. Cotesi D-Web protect cover, made from HMWPE, is also available on request.



Jacketed Ropes

Advantages

- Excellent ratio between diameter, weight and breaking load
- Excellent abrasion resistance
- Excellent UV resistance
- Lower elongation
- Lower operational costs
- CS3 Splice

Applications

Mooring
Lines

Winch
Lines

Towing
and Tug
Lines

Diameter		Size Circ.	Weight			Breaking Load		
mm	Inches	Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	399	39,9	26,8	19.942	43.964	196
26	1 1/32	3 1/4	496	49,6	33,3	24.765	54.597	243
28	1 1/8	3 1/2	616	61,6	41,4	30.750	67.791	302
30	1 1/4	3 3/4	691	69,1	46,4	35.315	77.855	346
32	1 5/16	4	765	76,5	51,4	39.880	87.919	391
36	1 1/2	4 1/2	950	95	63,8	49.775	109.733	488
40	1 5/8	5	1.310	131	88	60.270	132.870	591
42	1 11/16	5 5/16	1.400	140	94,1	68.000	149.913	667
44	1 3/4	5 1/2	1.470	147	98,8	72.264	159.312	708
48	2	6	1.750	175	117,6	84.858	187.076	832
52	2 1/8	6 1/2	1.890	189	127	98.551	217.263	966
56	2 1/4	7	2.270	227	152,5	112.644	248.333	1.104
60	2 1/2	7 1/2	2.560	256	172	128.036	282.266	1.255
64	2 5/8	8	2.840	284	190,8	143.728	316.861	1.409
68	2 3/4	8 1/2	3.070	307	206,3	160.820	354.540	1.577
72	2 7/8	9	3.670	367	246,6	177.711	391.779	1.742
76	3	9 1/2	3.900	390	262,1	195.802	431.662	1.920
80	3 1/4	10	4.170	417	280,2	213.993	471.766	2.098
88	3 5/8	11	4.930	493	331,3	254.773	561.668	2.498
96	4	12	5.600	560	376,3	297.801	656.523	2.920
104	4 1/4	13	6.620	662	444,8	349.925	771.439	3.431
112	4 5/8	14	7.880	788	529,5	413.393	911.361	4.053

More diameters available by demand.

The technical characteristics stated are the result of a Cotesi development and are strictly indicative. We reserve the right to change them without prior notice. Tolerance in weights: $\pm 5\%$. Indicated breaking loads do not include any reduction in case of a rope with eye-spliced terminations. Produced and tested in accordance to the latest ISO standards.

- ✓ Raw Material: Polyester (HT)
- ✓ Specific Gravity: 1,38
- ✓ Melting Point: 265°C

- ✓ Elongation at % of BS:
 - 25% 2,8%
 - 50% 4,9%

D-TECH WINCHLINE PLUS

With HMWPE Jacket

Made from HMWPE fibers and coated with a Pro-Tech self-unique impregnation that improves abrasion, heat resistance and fatigue properties. Cotesi D-Tech Winchline Plus must be considered when high breaking strengths are required. Stronger than steel wire ropes of the same weight, it has proven to be a cost-saving replacement in several applications. Double braided optimized construction to higher breaking loads, with a 12 strands HMWPE core and a 32 braids cover in HMWPE. Also available with PES & PE jacket.



Jacketed Ropes

Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Non-kinking and non-rotating
- Easy and safer handling

D-Tech WINCHLINE

With HMWPE Jacket

Made from HMWPE fibers and coated with a Pro-Tech self-unique impregnation that improves its abrasion resistance and fatigue properties, Cotesi D-Tech Winchline must be considered when high breaking strengths are required. Stronger than steel wire ropes of the same weight, it has proven to be a cost-saving replacement in several applications. Double braided construction to higher breaking loads, with a 12 strands HMWPE core and a 32 braids cover in HMPE. Also available with PES & PE jacket.



Jacketed Ropes

Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Non-kinking and non-rotating
- Easy and safer handling

Diameter		Size	Weight			Breaking Load		
mm	Inches	Circ. Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	310	31	20,8	33.141	73.062	325
30	1 1/4	3 3/4	500	50	33,6	64.956	143.201	637
32	1 5/16	4	640	64	43	75.051	165.457	736
34	1 11/32	4 1/4	680	68	45,7	84.025	185.240	824
36	1 1/2	4 1/2	720	72	48,4	92.998	205.023	912
38	1 9/16	4 3/4	800	80	53,8	101.972	224.806	1.000
40	1 5/8	5	900	90	60,5	116.248	256.279	1.140
44	1 3/4	5 1/2	1.110	111	74,6	140.721	310.232	1.380
48	2	6	1.320	132	88,7	164.175	361.938	1.610
52	2 1/8	6 1/4	1.500	150	100,8	195.786	431.628	1.920
56	2 1/4	7	1.765	176,5	118,6	230.457	508.062	2.260

More diameters available by demand.

- ✓ Raw Material: HMWPE
- ✓ Specific Gravity: 0,98
- ✓ Melting Point: 150°C

- ✓ Elongation at % of BS:
25% 0,9%
- 50% 1,6%

Applications



Diameter		Size	Weight			Breaking Load		
mm	Inches	Circ. Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	360	36	24,2	38.749	85.426	380
30	1 1/4	3 3/4	425	42,5	28,6	45.887	101.163	450
32	1 1/3	4	474	47,4	31,9	53.025	116.899	520
34	1 11/32	4 1/4	544	54,4	36,6	61.183	134.884	600
36	1 1/2	4 1/2	637	63,7	42,8	69.341	152.868	680
38	1 4/7	4 3/4	706	70,6	47,4	78.518	173.101	770
40	1 5/8	5	765	76,5	51,4	88.716	195.581	870
44	1 3/4	5 1/2	963	96,3	64,7	106.051	233.798	1.040
48	2	6	1.100	110	73,9	128.485	283.256	1.260
52	2 1/8	6 1/4	1.380	138	92,7	148.879	328.217	1.460
56	2 1/4	7	1.575	157,5	105,8	173.352	383.170	1.700

More diameters available by demand.

- ✓ Raw Material: HMWPE
- ✓ Specific Gravity: 0,98
- ✓ Melting Point: 150°C

- ✓ Elongation at % of BS:
25% 0,9%
- 50% 1,6%

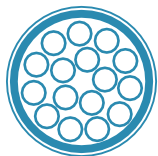
Applications



D-Tech WINCHLINE Plus

With Polyester Jacket

Made from HMWPE fibers and coated with a Pro-Tech self-unique impregnation that improves its abrasion resistance and fatigue properties, Cotesi D-Tech Winchline Plus must be considered when high breaking strengths are required. Stronger than steel wire ropes of the same weight, it has proven to be a cost-saving replacement in several applications. Double braided optimized construction to higher breaking loads, with a 12 strands HMWPE core and a 32 braids cover in Polyester. Also available with HMPE & PE jacket.



Jacketed Ropes

Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Non-kinking and non-rotating
- Easy and safer handling

Diameter		Size	Weight			Breaking Load		
mm	Inches	Circ. Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	340	34	22,8	33.141	73.062	325
30	1 1/4	3 3/4	551	55,1	37	64.956	143.101	637
32	1 5/16	4	700	70	47	75.051	165.457	736
34	1 11/32	4 1/4	754	75,4	50,7	84.025	185.240	824
36	1 1/2	4 1/2	808	80,8	54,3	92.998	205.023	912
38	1 9/16	4 3/4	893	89,3	60	101.972	224.806	1.000
40	1 5/8	5	1.000	100	67,2	116.248	256.279	1.140
44	1 3/4	5 1/2	1.250	125	84	140.721	310.232	1.380
48	2	6	1.480	148	99,4	164.175	361.938	1.610
52	2 1/8	6 1/4	1.700	170	114,2	195.786	431.628	1.920
56	2 1/4	7	1.900	190	127,7	230.457	508.062	2.260

More diameters available by demand.

- ☑ Raw Material: HMWPE / Polyester
- ☑ Specific Gravity: 1,06
- ☑ Melting Point: 150°C / 265°C
- ☑ Elongation at % of BS: 25% 0,9%
- ☑ 50%1,6%

Applications



D-Tech WINCHLINE

With Polyester Jacket

Made from HMWPE fibers and coated with a Pro-Tech self-unique impregnation that improves its abrasion resistance and fatigue properties. Cotesi D-Tech Winchline must be considered when high breaking strengths are required. Stronger than steel wire ropes of the same weight, it has proven to be a cost-saving replacement in several applications. Double braided construction to higher breaking loads, with a 12 strands HMWPE core and a 32 braids cover in Polyester. Also available with HMPE & PE jacket.



Jacketed Ropes

Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Non-kinking and non-rotating
- Easy and safer handling

Diameter		Size	Weight			Breaking Load		
mm	Inches	Circ. Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	409	40,9	35,6	38.749	85.426	380
30	1 1/4	3 3/4	489	48,9	42,6	45.887	101.163	450
32	1 1/3	4	508	50,8	44,2	53.025	116.899	520
34	1 11/32	4 1/4	581	58,1	50,6	61.183	134.884	600
36	1 1/2	4 1/2	682	68,2	59,4	69.341	152.868	680
38	1 4/7	4 3/4	750	75	65,3	78.518	173.101	770
40	1 5/8	5	800	80	69,6	88.716	195.581	870
44	1 3/4	5 1/2	1.009	100,9	87,8	106.051	233.798	1.040
48	2	6	1.183	118,3	103	128.485	283.256	1.260
52	2 1/8	6 1/4	1.465	146,5	127,5	148.879	328.217	1.460
56	2 1/4	7	1.675	167,5	145,8	173.352	382.170	1.700

More diameters available by demand.

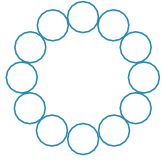
- ☑ Raw Material: HMWPE / Polyester
- ☑ Specific Gravity: 1,06
- ☑ Melting Point: 150°C / 265°C
- ☑ Elongation at % of BS: 25% 0,9%
- ☑ 50%1,6%

Applications



D-Tech

Made from HMWPE fibers and protected by a self-unique impregnation that improves its abrasion resistance, Cotesi D-Tech ropes must be considered when high breaking strengths are required. Using a torque-free 12 strands braided construction, D-Tech is stronger than steel wire of the same weight and has proven to be a cost-saving replacement for wire rope in several applications, such as mooring, towing or lifting.



12 Strands



Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Flexible, non-kinking and non-rotating
- Easy and safer handling
- Easy to splice

Applications

Mooring
Lines

Anchor
Lines

Winch
Lines

Towing
and Tug
ropes

Diameter		Size Circ.	Weight			Breaking Load		
mm	Inches	Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
6	1/4	3/4	23	2,3	1,5	4.079	8.992	40
8	1/3	1	40	4	2,7	7.036	15.512	69
10	3/8	1 1/8	61	6,1	4,1	10.707	23.605	105
12	1/2	1 1/2	87	8,7	5,8	15.296	33.721	150
14	4/7	1 3/4	117	11,7	7,9	20.394	44.961	200
16	5/8	2	152	15,2	10,2	26.003	57.326	255
18	3/4	2 1/4	190	19	12,8	32.121	70.814	315
20	13/16	2 1/2	233	23,3	15,7	38.749	85.426	380
22	7/8	2 3/4	280	28	18,8	45.887	101.163	450
24	1	3	331	33,1	22,2	53.025	116.899	520
26	1 1/32	3 1/4	386	38,6	25,9	61.183	134.884	600
28	1 1/8	3 1/2	445	44,5	29,9	69.851	153.992	685
30	1 1/4	3 3/4	508	50,8	34,1	79.028	174.225	775
32	1 5/16	4	575	57,5	38,6	88.206	194.457	865
34	1 11/32	4 1/4	646	64,6	43,4	98.403	216.938	965
36	1 1/2	4 1/2	722	72,2	48,5	109.110	240.542	1.070
38	1 9/16	4 3/4	801	80,1	53,6	119.817	264.147	1.175
40	1 5/8	5	884	88,4	59,4	131.034	288.876	1.285
44	1 3/4	5 1/2	1.062	106,2	71,4	155.507	342.829	1.525
48	2	6	1.255	125,5	84,3	181.000	300.031	1.775
52	2 1/8	6 1/2	1.464	146,4	98,4	208.533	459.728	2.045
56	2 1/4	7	1.688	168,8	113,4	237.595	523.798	2.330
60	2 1/2	7 1/2	1.928	192,8	129,6	268.696	592.364	2.635
64	2 5/8	8	2.183	218,3	146,7	300.817	663.178	2.950
68	2 3/4	8 1/2	2.453	245,3	164,8	334.978	738.488	3.285
72	2 7/8	9	2.738	273,8	184	370.668	817.170	3.635

More diameters available by demand.

In accordance to ISO 10325:2018.

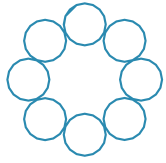
Breaking load values stated shall be reduced by 10% in the case of a rope with eye-spliced terminations.

- ✓ Raw Material: HMWPE
- ✓ Specific Gravity: 0,98
- ✓ Melting Point: 150°C

- ✓ Elongation at % of BS:
 - 25% 0,9%
 - 50% 1,6%

D-Tech

Made from HMWPE fibers and protected by a self-unique impregnation that improves its abrasion resistance, Cotesi D-Tech ropes must be considered when high breaking strengths are required. Stronger than steel wire of the same weight, it has proven to be a cost-saving replacement for wire rope in several applications. Its 8 strands plaited construction is smooth and non-rotational.



8 Strands



Advantages

- 1/7 of the steel wire weight
- Longer life time compared to steel wire
- Low operational costs
- Low elongation
- Non-kinking and non-rotating
- Easy and safer handling
- Very easy to splice

Applications

Mooring
Lines

Anchor
Line

Winch
Lines

Towing
and tug
ropes

Diameter		Size Circ.	Weight			Breaking Load		
mm	Inches	Inches	Ktex	Kg/100m	lbs/100ft	kgf	lbf	kN
24	1	3	331	33,1	22,2	53.025	116.899	520
26	1 1/32	3 1/4	386	38,6	25,9	61.183	134.884	600
28	1 1/8	3 1/2	445	44,5	29,9	69.851	153.992	685
30	1 1/4	3 3/4	508	50,8	34,1	79.028	174.225	775
32	1 5/16	4	575	57,5	38,6	88.206	194.457	865
34	1 11/32	4 1/4	646	64,6	43,4	98.403	216.938	965
36	1 1/2	4 1/2	722	72,2	48,5	109.110	240.542	1.070
38	1 9/16	4 3/4	801	80,1	53,8	119.817	264.147	1.175
40	1 5/8	5	884	88,4	59,4	131.034	288.876	1.285
44	1 3/4	5 1/2	1.062	106,2	71,4	155.507	342.829	1.525
48	2	6	1.255	125,5	84,3	181.000	399.031	1.775
52	2 1/8	6 1/2	1.464	146,4	98,4	208.533	459.728	2.045
56	2 1/4	7	1.688	168,8	113,4	237.595	523.798	2.330
60	2 1/2	7 1/2	1.928	192,8	129,6	268.696	592.364	2.635
64	2 5/8	8	2.183	218,3	146,7	300.817	663.178	2.950
68	2 3/4	8 1/2	2.453	245,3	164,8	334.978	738.488	3.285
72	2 7/8	9	2.738	273,8	184	370.668	817.170	3.635
76	3	9 3/8	3.038	303,8	204,1	407.888	899.224	4.000
80	3 1/4	10	3.353	335,3	225,3	446.128	983.526	4.375
88	3 5/8	11	4.028	402,8	270,7	528.215	1.164.495	5.180
96	4	12	4.762	476,2	320	615.911	1.357.828	6.040
104	4 1/4	13	5.555	555,5	373,3	709.725	1.564.650	6.960
112	4 5/8	14	6.406	640,6	430,5	809.148	1.783.836	7.935
120	5	15	7.316	731,6	491,6	913.669	2.014.262	8.960
128	5 1/4	16	8.233	823,3	553,2	1.024.309	2.258.176	10.045
136	5 1/2	17	9.308	930,8	625,5	1.140.047	2.513.331	11.180

More diameters available by demand.

In accordance to ISO 10325:2018.

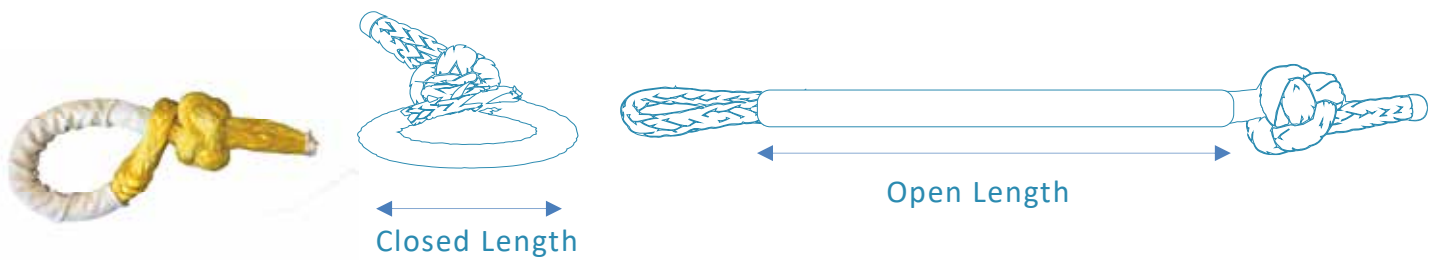
Breaking load values stated shall be reduced by 10% in the case of a rope with eye-spliced terminations.

- ✓ Raw Material: HMWPE
- ✓ Specific Gravity: 0,98
- ✓ Melting Point: 150°C

- ✓ Elongation at % of BS:
25% 0,9%
50% 1,6%

Soft Shackle

The Soft Shackle is designed to be a safe, lightweight and easy-to-use device, being a good replacement for steel shackles in tug applications. It is made from HMWPE fibers and protected by an impregnation that improves its overall performance. This Soft Shackle forms a closed loop with an easy-open eye and a stopper knot.



D-Tech 12 Soft Shackle	Diam.	Weight	L1		L2		L3	
	mm	kg/100m	kN	Ton	kN	Ton	kN	
D Tech with PES cover	20	23,2	570	85,3	836	131,8	1.292	
	22	28,1	675	101	990	156,1	1.530	
	24	33,1	780	116,7	1.144	180,3	1.768	
	26	38,4	900	134,6	1.320	208,1	2.040	
	28	44,5	1.020	152,6	1.496	235,8	2.312	
	30	50,6	1.155	172,8	1.694	267	2.618	
	32	57,5	1.305	195,2	1.914	301,7	2.958	

Aprox. Length Closed (mm): 500
Stated breaking loads are theoretical subject to a variation of +/-10%.
Recommended D/d ratio 3,5:1



General Information

Rope Construction

Raw Materials

Care & Use

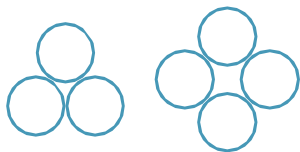
Glossary



Rope Construction

Rope construction plays an important role in resistance to wear and abrasion. Braided ropes have a round, smooth construction that tends to flatten out some-what on a bearing surface. This distributes the wear over a much greater area, as opposed to the crowns of a three-strand.

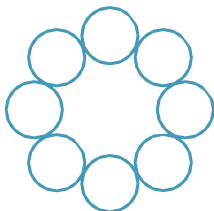
All ropes should be protected against sharp and abrasive surfaces. Wire ropes tend to score and gouge chocks and bitts creating cutting edges that can damage synthetic ropes. Weld beads on repaired capstands, fairleads, etc. are equally damaging unless dressed down smoothly.



3 / 4 Strands

3 OR 4 STRAND TWISTED

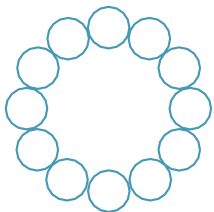
3 or 4 strands is the oldest and simplest rope construction, consisting of 3 or 4 twisted strands laid together. Twisted constructions may retain some torque, and therefore tend to kink up and to rotate under load. Twisted ropes are hard wearing and easily spliced.



8 Strands

8 STRAND BRAIDED

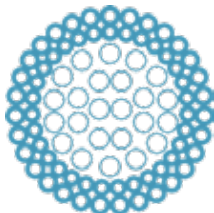
8 strand ropes also called square braided or plaited are constructed of left and right-hand laid strands to give a torque-free rope. They are easily spliceable and provide an excellent rope structure for mooring lines.



12 Strands

12 STRAND BRAIDED

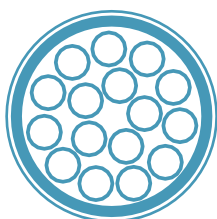
12 strand ropes are constructed of left and right-hand laid strands to give a torque-free balanced construction and its round laid shape provides excellent abrasion resistance due to a greater surface of contact and may offer higher breaking strengths over conventional constructions. They are easily spliceable and provide a good rope structure for mooring lines.



Double Braid

DOUBLE BRAID

Double Braided ropes are constructed of a braided cover over a braided core. Rope core and cover can be of different braided constructions being the most common one as a core braided 12 strand rope and as cover a 32 braids. As both cover and core play an important role in the rope breaking load, ratio between core and cover must not exceed 60% core.



Jacketed Ropes

JACKET ROPES

Jacket ropes consist on cover over a load bearing core. Most common jackets are of 32 braids whilst the core can be either of a braided or multi parallel strands construction. A load bearing core jacket rope must have a core ratio no less than 70% of the rope. Jacket is used to finalize the rope and protect it during use.

Raw Materials

Different Fibers, Different Characteristics, Different Results

Fiber	Polyamide (PA) 6 unid 6,6	PES (Polyester)	PP (Polypropilene)	PP (Polypropilene) multifilament	PE (Polyethilene)	HMWPE	Mixed (Polyolefin)	Sisal
Brandname	Perlon Nylon Nylsuisse Enkalon	Diolen Trevira Dacron Ersuisse	Leolene Arova	Hostalen Softlene Leolene	Lupolen Vestalen Wetalen	Dyneema	-	-
Tenacity (GF/Denier)	7,5 to 10,5	7,5 to 10,5	6 to 6,5	6 to 6,5 7,3 to 9,5	5,5 to 9,5	32,8 to 39,8	6,5 to 8,5	2 to 2,5
Specific Gravity Kg/DM3	1,14	1,38	0,91	0,91	0,96	0,96	0,94	1,38
Elongation at Break %	14 to 28	14 to 18	14 to 18	20 to 24 16 to 20	16 to 24	3 to 3,5	12 to 18	3 to 12
Creep Resistance	Moderate	Low	High	High	High	Moderate	High	Very Low
Shock Load Absorption	Excellent	Very Good	Very Good	Very Good	Fair	Excellent	Good	Poor
Melting Point C°	215 (PA) 255 (NYLON)	260	170	170	150	150	165	165
Water Absorption %	Yes	Yes	No	No	No	No	No	Yes
Dry Strength compared to wet Strength	85% - 90%	100%	100%	100%	105%	100%	100%	120%
UV Resistance	Good	Excellent	Fair	Fair	Fair	Excellent	Good	Good
Resistance to Abrasion	Very Good	Very Good	Fair	Fair	Fair	Good	Good	Fair

Table Based on the information provided by Cordage Institute Technical Service

EXTENSION AND ELASTICITY

Rope extension and elasticity are important features because they will establish rope behaviour in terms of peak loads. Load-extension characteristics of synthetic fiber ropes are non-linear and time dependent.

Several different components complete overall extension of a rope.

VISCOELASTIC EXTENSION

Viscoelastic extension is only recoverable some time after releasing the load. The performance of ropes subjected to occasional high loads will be significantly influenced by this viscoelastic component.

ELASTIC EXTENSION

Elastic extension is the immediately recoverable extension upon the release of the load and in a continuously working environment that dominates rope behaviour.

PERMANENT EXTENSION

Permanent extension is non-recoverable. It occurs when a new rope is first used or when subject to an unusually high load and is the result of the lay down of individual fiber components to their preferred positions. Continuous loading of some ropes can also lead to permanent extension.

Care & Use

STORAGE

Ropes should be stored on a dry and clean place, out of direct sunlight sources. When possible, it should be stored off the ground, away from metal walls or steam pipes, to allow adequate ventilation and away from chemicals of all types.

Never store rope on concrete or dirty floors, or drag over rough ground – dirt or sand picked up by the rope may cause cuttings on inside fibers during work. In case of long-term storage, ropes should be cleaned with fresh water to reduce salt crystals that may affect its life and efficiency.

HANDLING

When a rope is supplied in a coil it should always be uncoiled from the inside so that the first turn comes off from the bottom in a counter-clockwise direction. When supplied on reels, it must be allowed to freely rotate so that the rope can be drawn off the top layer. Never take rope from a reel lying on its side.

A wrong coil or uncoil on a twisted rope will provoke kinking and hockling. Three and four strand ropes should be coiled in a clockwise direction (in lay's direction) and uncoiled in a counterclockwise direction to avoid hockling and kinking.

Braided ropes can not be kinked or hockled, however, twist can be produced into ropes during service. Excessive twist may cause an imbalance between the right and left hand strands and should be removed as soon as possible by counter-rotating the rope when it is relaxed. The best method for storing both, braided and twisted ropes is in a eight figure fashion.

ROPE SAFETY

Never stand in line with a rope under tension. If a rope fails, it can draw back with sufficient force to cause serious injuries. Always ensure correct safety factors are being used.

ROPE INSPECTION

Avoid using ropes that show signs of aging and wear. Rope should be inspected regularly for evidence of chemical attack, kinking, and surface abrasion including major yarn or strand cuts and heat fusion indicated by glazed or heavy fuzzed areas.

Braided ropes should be examined along their entire length for areas of stiffening or inconsistent diameter, which can be a sign of internal damage or core failure due to overloading or severe shock loads. Both, outer and inner rope fibers contribute to the strength of the rope and when either is worn, rope is naturally weakened.

No type of visual inspection is a guarantee to an accurate determination of residual strength. When the fibers show wear in any given area, if limited to one small section, the damaged area may be cut out and re-spliced, otherwise the rope should be downgraded or replaced.

SPLICING AND KNOTS

The use of knots can reduce rope strength over fifty percent, so whenever possible splices should be used instead. Variations up to twenty five percent can occur with poor splicing or very short length. According to each situation, always take into consideration the corresponding reduction to the rope strength adjusting working loads accordingly. When splices are used, always use recommended splicing procedures of the manufacturer.

The length of an eye in a rope should be a minimum of three times, and preferably five times, the diameter of the item around which it is to be used. This will ensure that the angle between the two legs of the eye will not cause a tearing action to the throat of the eye. For instance, if the eye of a mooring line is passing around a 600 mm diameter bollard, then the eye should be a minimum of 1,80 meters.

BENDING RADIOUS

Sharp bends around any piece of equipment should be avoided as, under load, it decreases rope strength substantially and may cause premature damage and failure. The diameter on fixed pin terminations should be at least 3 times the rope diameter and on rotating sheave blocks, it should be 10 times the rope diameter for twisted ropes and 8 times the rope diameter for braided ropes

WORKING LOADS

Working loads are the loads that a rope is subjected to when in activity. They are normally expressed as a percentage of new rope strength and should not exceed 20% of published strengths (many industries are subject to special working loads regulations that supersede manufacturer's recommendation).

When severe overloaded or shock loads takes place, rope can suffer damages and consequently strength losses without any visible indication, which may weaken the rope causing it to break on next use, even if used under normal working loads. Sharp bends should be avoided as, under load, it decreases rope strength substantially and can cause premature failure.

Glossary

Double Braid Ropes

Double Braided ropes are constructed of a braided cover over a braided core. Rope core and cover can be of different braided constructions being the most common one as core a braided 12 strand rope and as cover a 32 braids. As both cover and core play an important role in the rope breaking load, ratio between core and core must not exceed 60% core.

Double Leg Sling (Grommet)

Loop of rope made by splicing the ends together. Often used as a lifting sling.

Elastic Elongation

Occurs immediately when a load is applied. Disappears as soon as the load is removed.

Elongation

The amount by which a rope stretches. This value is usually a % in length change.

Jacketed ropes

Jacketed ropes consist on cover over a load bearing core. Most common jackets are of 32 braids whilst the core can be either of a braided or multi parallel strands construction. A load bearing core jacket rope must have a core ratio no less than 70% of the rope. Jacket is used to finalize the rope and protect it during use.

LDBF - Line Design Break Force

This is the minimum force at which a new dry, spliced mooring line will break when tested according to MEG4. This applies to all mooring lines with exception of Nylon, which should be tested in a wet condition. MEG4 states that LDBF should have a value between 100% and 105% of the ship design.

MBL - Minimum Break Load

A value that indicates the minimum load or force to be achieved by the rope/line.

Seize

Similar to whipping, often used to bind 2 ropes together with smaller cordage, or to form an eye.

Single Leg Sling

Length of rope formed into a sling by having an eye spliced at each end of it.

Splicing

Method of joining a rope to itself or to another rope, or of producing an eye at the end of the rope. Splicing is done by interweaving the strands of the rope.

TDBF - Tail Design Breaking Force

Mooring tails experience more wear in service than mooring lines. For this reason, the Tail Design Breaking Force needs to be higher than the LDBF. The TDBF should be between 125% and 130% of the ship design MBL. The manufacturer states the TDBF on each mooring tail manufacturer's certificate and on the technical datasheet of the product. Please be aware that the TDBF is tested and defined in a wet condition. So, this is different from the situation for the LDBF.

Twist

"S" twist or "S" lay is a left hand lay. When in a vertical position, the spirals of the rope incline in the same direction as the center of the letter "S". "Z" Twist or "Z" lay is a right hand lay. When it is held in a vertical position, the spirals of the rope incline in the same direction as the center of the letter Z.

Whipping

Binding around the rope made with smaller diameter cordage. Used to tidy a rope end or to secure a splice.

3 or 4 Strand Ropes

Is the simplest rope construction. 3 or 4 twisted strands laid together. Twisted ropes are hard wearing and easily spliced.

8 Strand Ropes

Known as plaited ropes. They are composed of 8 strands grouped into 4 pairs. 2 of these pairs turn to the left and 2 pairs turn to the right.

12 Strand Ropes

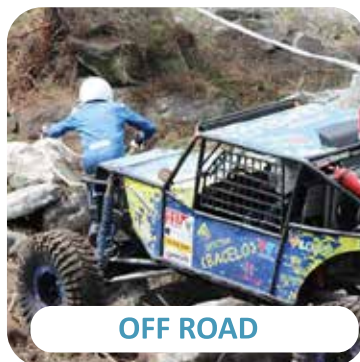
12 strand ropes give a rounder and smoother rope than 8 strands one. This is the ideal construction for rope cores and high strength braids. Like 8-braid ropes, 12-braid ropes are very easy to splice.



INDUSTRIAL



LIFTING



OFF ROAD



SAFETY ROPES

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