



DENVER ROPE - ROPE STRENGTH GUIDE

The Best Custom Boat Lines, Custom Colored Ropes, & Special Assemblies made to Your Specifications

NYLON DOUBLE BRAID			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	1,700	340
3/8"	10	4,100	820
1/2"	13	7,300	1,460
5/8"	16	14,600	2,920
3/4"	19	19,000	3,800
7/8"	22	28,100	5,620
1-0"	25	33,200	6,640
1-1/4"	32	52,000	10,400
1-1/2"	38	74,000	14,800
1-5/8"	41	92,100	18,420
1-3/4"	45	109,500	21,900
2-0"	51	129,700	25,940
2-1/4"	57	179,400	35,880
2-1/2"	64	196,000	39,200
2-5/8"	67	221,000	44,200
2-3/4"	70	237,000	47,400
3-0"	76	274,000	54,800
3-1/4"	83	339,000	67,800
3-5/8"	92	400,000	80,000

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

POLYESTER DOUBLE BRAID			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	2,000	400
3/8"	10	4,400	880
1/2"	13	8,200	1,640
5/8"	16	14,000	2,800
3/4"	19	20,000	4,000
7/8"	22	29,900	5,980
1-0"	25	38,000	7,600
1-1/4"	32	54,500	10,900
1-1/2"	38	72,000	14,400
1-5/8"	41	77,800	15,560
1-3/4"	45	89,200	17,840
2-0"	51	110,000	22,000
2-1/4"	57	141,000	28,200
2-1/2"	64	170,000	34,000
2-5/8"	67	186,000	37,200
2-3/4"	70	206,000	41,200
3-0"	76	237,000	47,400
3-1/4"	83	292,000	58,400
3-5/8"	92	348,000	69,600

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NYLON 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	1,650	330
3/8"	10	3,700	740
1/2"	13	6,400	1,280
5/8"	16	10,400	2,080
3/4"	19	13,800	2,760
7/8"	22	20,000	4,000
1-0"	25	25,000	5,000
1-1/4"	32	37,500	7,500
1-1/2"	38	53,000	10,600
2-0"	51	90,000	18,000
2-1/2"	64	125,000	25,000
3-0"	76	195,000	39,000
4-0"	102	360,000	72,000

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

POLYESTER 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	1,650	825
3/8"	9	3,700	1,850
1/2"	13	6,400	3,200
5/8"	16	10,000	5,000
3/4"	19	12,500	6,250
7/8"	22	18,000	9,000
1-0"	25	22,000	11,000
1-1/4"	32	33,200	16,600
1-1/2"	38	46,800	23,400

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POLYPROPYLENE 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	1,250	213
3/8"	10	2,700	459
1/2"	13	4,200	714
5/8"	16	6,200	1,054
3/4"	19	8,500	1,445
7/8"	22	11,500	1,955
1-0"	25	14,000	2,380
1-1/4"	32	21,000	3,570
1-1/2"	38	29,700	5,049
1-5/8"	41	36,000	6,120
1-3/4"	45	43,000	7,310
2-0"	51	52,000	8,840
2-1/4"	57	69,000	11,730
2-1/2"	64	80,000	13,600
3-0"	76	114,000	19,380
3-1/4"	83	137,000	23,290
3-1/2"	89	162,000	27,540
4-0"	102	190,000	32,300

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

MANILA 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	540	92
3/8"	10	1,215	207
1/2"	13	2,385	405
5/8"	16	3,960	673
3/4"	19	4,860	826
7/8"	22	6,930	1,178
1-0"	25	8,100	1,377
1-1/4"	32	12,150	2,066
1-1/2"	38	16,550	2,814
1-5/8"	41	20,250	3,443
1-3/4"	45	23,850	4,055
2-0"	51	27,900	4,743
2-1/4"	57	36,900	6,273
2-1/2"	64	41,850	7,115
3-0"	76	57,600	9,792
3-1/4"	83	69,300	11,781
3-1/2"	89	81,900	13,923
4-0"	102	94,500	16,065

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NYLON 12-STRAND PLAIT			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	2,000	400
3/8"	10	4,600	920
1/2"	13	8,000	1,600
5/8"	16	13,900	2,780
3/4"	19	17,900	3,580
7/8"	22	26,200	5,240
1-0"	25	30,100	6,020
1-1/4"	32	45,400	9,080
1-1/2"	38	64,800	12,960
1-5/8"	41	74,000	14,800
1-3/4"	45	92,100	18,420
2-0"	51	106,000	21,200
2-1/4"	57	152,000	30,400
2-1/2"	64	170,000	34,000
2-5/8"	67	189,000	37,800
2-3/4"	70	214,000	42,800
3-0"	76	245,000	49,000
3-1/4"	83	288,000	57,600
3-5/8"	92	338,000	67,600

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

POLYESTER 12-STRAND PLAIT			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/4"	6	2,100	420
3/8"	10	4,600	920
1/2"	13	8,000	1,600
5/8"	16	12,100	2,420
3/4"	19	15,800	3,160
7/8"	22	24,200	4,840
1-0"	25	27,500	5,500
1-1/4"	32	42,100	8,420
1-1/2"	38	59,600	11,920
1-5/8"	41	72,200	14,440
1-3/4"	45	84,400	16,880
2-0"	51	101,000	20,200
2-1/4"	57	137,000	27,400
2-1/2"	64	163,000	32,600
2-5/8"	67	179,000	35,800
2-3/4"	70	202,000	40,400
3-0"	76	233,000	46,600
3-1/4"	83	282,000	56,400
3-5/8"	92	340,000	68,000

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AMSTEEL / DYNEEMA 12-STRAND			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/8"	3	2,300	460
3/16"	5	4,900	980
1/4"	6	7,700	1,540
5/16"	8	12,300	2,460
3/8"	10	17,600	3,520
7/16"	11	21,500	4,300
1/2"	13	30,600	6,120
9/16"	14	36,500	7,300
5/8"	16	47,500	9,500
3/4"	19	58,000	11,600
7/8"	22	81,700	16,340
1-0"	25	98,100	19,620
1-1/8"	30	133,000	26,600
1-1/4"	32	149,000	29,800
1-1/2"	38	205,000	41,000
1-5/8"	41	255,000	51,000
1-3/4"	45	302,000	60,400
2-0"	51	343,000	68,600
2-1/4"	57	484,000	96,800
2-1/2"	64	529,000	105,800
2-5/8"	67	595,000	119,000
2-3/4"	70	735,000	147,000
3-0"	76	749,000	149,800
3-1/4"	83	1,007,000	201,400

IRONLITE / DYNEEMA 12-STRAND			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/8"	3	3,000	600
3/16"	5	5,800	1,160
1/4"	6	8,000	1,600
5/16"	8	12,400	2,480
3/8"	10	19,700	3,940
7/16"	11	22,000	4,400
1/2"	13	34,400	6,880
9/16"	14	36,500	7,300
5/8"	16	48,200	9,640
3/4"	19	65,600	13,120
7/8"	22	103,840	20,768
1-0"	25	123,200	24,640
1-1/8"	30	163,900	32,780
1-1/4"	32	184,400	36,880
1-1/2"	38	247,500	49,500
1-5/8"	41	323,400	64,680

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SUPERDAN (MAXIMA) 8-STRAND			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
2-0"	51	67,200	13,440
2-1/4"	57	78,000	15,600
2-1/2"	64	91,500	18,300
2-5/8"	67	103,500	20,700
3-0"	76	135,000	27,000
3-1/4"	83	171,000	34,200
4-0"	102	243,000	48,600

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

MAXIFLEX 8-STRAND			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
		-	-
2-1/4"	57	138,000	27,600
		-	-
2-5/8"	67	182,000	36,400
3-0"	76	224,900	44,980
3-1/4"	83	276,700	55,340
		-	-

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POLY-DAC 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
3/8"	10	2,700	459
1/2"	13	4,400	748
5/8"	16	6,100	1,037
3/4"	19	8,400	1,428
7/8"	22	11,125	1,891
1-0"	25	13,175	2,240
1-1/2"	38	28,250	4,803
2-0"	51	48,050	8,169

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

WINDLASS - NYLON 3-STRAND TWISTED			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/2"	13	6,400	1,280
9/16"	14	7,900	1,580
5/8"	16	10,400	2,080
3/4"	19	13,800	2,760

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POLYPROPYLENE 8-STRAND HOLLOW BRAID			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/8", #4	3	150	26
3/16", #6	5	475	81
1/4", #8	6	900	153
5/16", #10	8	1,200	204
3/8", #12	10	1,600	272
1/2", #16	13	2,000	340

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

WINDLASS - NYLON 8-PLAIT			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
3/8"	9	4,000	1,000
1/2"	12	8,300	2,075
5/8"	16	9,200	2,300
3/4"	18	12,200	3,050
7/8"	22	17,000	4,250
1-0"	24	24,840	6,210

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NYLON SOLID BRAID			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/8", #4	4	575	115
3/16", #6	5	825	165
1/4", #8	6	1,325	265
5/16", #10	8	1,925	385
3/8", #12	9	2,800	560
1/2", #16	12	4,200	840

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and knots will further reduce these figures over time.

POLYESTER SOLID BRAID			
Diameter	Diameter	Tensile Strength	Working Load
inches	mm	pounds	pounds
1/8", #4	4	355	71
3/16", #6	5	626	125
1/4", #8	6	1,000	200
5/16", #10	8	1,600	320
3/8", #12	9	2,300	460
1/2", #16	12	3,000	600

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Diameter	Diameter	Diameter	Circumference	Circumference
fractional inches	decimal inches	mm	inches	mm
1/8"	0.125	3.2	0.4	10.0
3/16"	0.1875	4.8	0.6	15.0
1/4"	0.25	6.4	0.8	20.0
5/16"	0.3125	7.9	1.0	24.9
3/8"	0.375	9.5	1.2	29.9
7/16"	0.4375	11.1	1.4	34.9
1/2"	0.5	12.7	1.6	39.9
9/16"	0.5625	14.3	1.8	44.9
5/8"	0.625	15.9	2.0	49.9
3/4"	0.75	19.1	2.4	59.9
7/8"	0.875	22.2	2.8	69.8
1-0"	1.0	25.4	3.1	79.8
1-1/8"	1.1875	30.2	3.7	94.8
1-1/4"	1.25	31.8	3.9	99.8
1-1/2"	1.5	38.1	4.7	119.7
1-5/8"	1.625	41.3	5.1	129.7
1-3/4"	1.75	44.5	5.5	139.7
2-0"	2.0	50.8	6.3	159.7
2-1/8"	2.2	55.6	6.9	174.6
2-1/4"	2.25	57.2	7.1	179.6
2-1/2"	2.5	63.5	7.9	199.6
2-5/8"	2.625	66.7	8.2	209.6
2-3/4"	2.75	69.9	8.6	219.5
3-0"	3.0	76.2	9.4	239.5
3-1/4"	3.25	82.6	10.2	259.4
3-1/2"	3.5	88.9	11.0	279.4
3-5/8"	3.625	92.1	11.4	289.4
3-3/4"	3.75	95.3	11.8	299.4
4-0"	4.0	101.6	12.6	319.3
4-1/4"	4.25	108.0	13.4	339.3
4-1/2"	4.5	114.3	14.1	359.2
4-5/8"	4.625	117.5	14.5	369.2
4-3/4"	4.75	120.7	14.9	379.2
5-0"	5.0	127.0	15.7	399.1



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Conversion Factors and Information

1 inch = 25.4 mm
12 inches = 1 foot
1 foot = 304.8 mm
1 meter = 3.28 ft

Circumference of a Circle

Circular = $\text{PI} \times \text{Diameter}$

Weight

1 Pound = 0.4536 kG
1 kG = 2.2046 lbs

Force

1 Newton = 0.2248 lbs
1 kN = 224.8 lbs

Standard Hawser Lengths

50 ft / 100 ft / 300 ft / 600 ft / 720 ft / 900 ft / Custom
Where 1 Fathom = 6 feet

Minimum Breaking Strength (MBS) to Working Load Limit (WLL)

WLL for Very Conservative = $\text{MBS}/10$
WLL for Standard Conservative = $\text{MBS}/5$ (Denver Rope Selection)
WLL for Less Conservative = $\text{MBS}/3$
WLL = Engineered Calculation

MBS = Tensile Strength

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