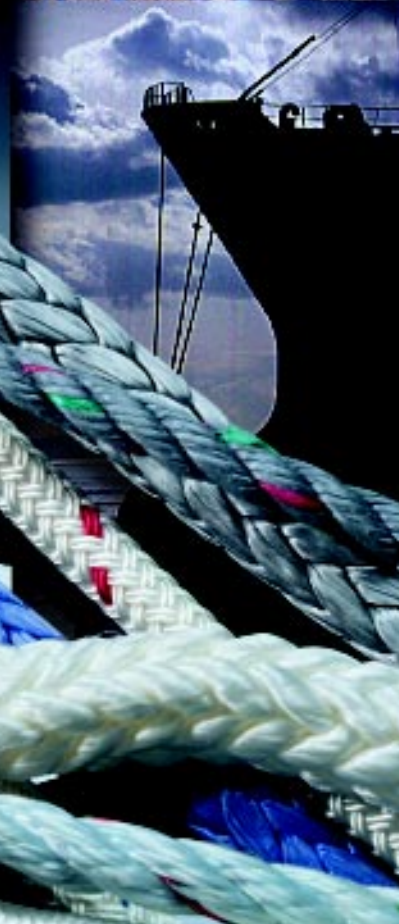


THE AMERICAN GROUP MARINE & INDUSTRIAL ROPES



Excellence In Rope Making For Over 100

COMMITMENT TO QUALITY AND SERVICE

Over the centuries, the need to pull, haul, lift, hoist, hold, retain or otherwise control objects has given rise to numerous methods and systems. Common to all is a strength member that performs the working part of the system. By virtue of synthetic fiber development, synthetic rope has achieved significant recognition as an extremely effective strength member for an ever-increasing range of applications. Today there are synthetic ropes stronger than wire rope size-for-size and yet so light they float in water.

The American Group's rope history dates back to 1884 and we still maintain the oldest continuously registered trademark, Samson and the lion, in the United States. With our involvement in the design and manufacture of strength members for industrial and marine applications for well over a century, we have certainly witnessed tremendous developments in raw materials that could be utilized in rope design and production. Vegetable fibers, such as manila, sisal, hemp and cotton, were the major raw materials available to rope manufacturers until the advent of a synthetic fiber called nylon in the 1940's. From that period, a rapid growth in synthetic fibers took place with the development of polypropylene, polyethylene, polyester, and Nomex® fibers. Most recently in the development progression are synthetic fibers such as Kevlar™, Spectra®, Vectran®, and Dyneema® which offer the potential of yielding the strengths of wire rope in a light-weight synthetic strength member. Each fiber, vegetable or synthetic, has its own unique physical characteristics. It is important to understand these characteristics since they are the primary building block of all rope constructions.

Establishing separate and defined manufacturing processes for each fiber type and associated rope construction is

crucial to insuring that we supply the stated physical characteristics (such as strength, weight, stretch, and firmness) of each product on a consistent basis. The American Group maintains an individual Research and Development department and Quality Control function at all of its manufacturing facilities to insure consistent quality of all products produced. Our facilities in the United States have ISO-9001 certification and extensive associated testing facilities to verify that our products meet stated specifications on a daily basis.

Our commitment to producing consistent quality products goes beyond just testing finished rope; we begin the process by verifying the fiber characteristics for strength, stretch and wear. Fiber is only released to manufacturing after the required physical properties have been verified to meet established specifications. Through this verification process, whether we purchase fiber or produce our own fiber, the basic building block of rope is verified.

The American Group goes beyond the guarantee of being a consistent quality rope producer; we constantly challenge ourselves to be the leader in rope design technology by listening to the end-users regarding changing application requirements and matching those needs to a fiber type and rope construction for improved performance. Our involvement and support is created not only from our R & D groups but by our on-going reliance on maintaining an extensive technically trained sales group to assist end-users in assessing the over-all rope needs for any application.

The American Group is ready, willing, and able to supply a total strength member program whether the need is to pull, haul, lift, hoist, hold, retain or otherwise control an object.

The information enclosed on our current products and technical support information is to assist in rope selection, rope usage, and rope retirement. Even though the information presented is comprehensive, **Contact us for assistance** and allow us to meet our challenge of offering a total strength member program.

MANUFACTURING CAPABILITIES

Four facilities

- 1) AMCO DIVISION – Lafayette, Louisiana**
 - 3-Strand twisted rope
 - 8-Strand plaited rope
 - Fiber extrusion
- 2) SAMSON DIVISION – Ferndale, Washington**
 - 12-Strand single braided rope
 - 2-in-1 Double braided rope
 - Specialty braided ropes
- 3) HERZOG ROPE DIVISION – Richmond, British Columbia**
 - 12-Strand single braided rope
 - 2-in-1 Double braided rope
 - Specialty braided ropes
- 4) DIFSA DIVISION – Merida, Yucatan**
 - Solid braided rope
 - Hollow braided rope
 - Fiber extrusion

SIZE RANGE CAPABILITY (ROPE DIAMETER):

CONSTRUCTION	DIAMETER (Inches)	DIAMETER (mm)
Solid Braid	3/32 to 5/8	2.5 to 15
Hollow Braid	3/16 to 1/2	5 to 12
Single Braid	7/64 to 4-5/8	2.5 to 112
2-in-1 Double Braid	1/4 to 5	6 to 120
Specialty Braid	1/4 to 9	19 to 72
3-Strand Twist	1/4 to 3-1/4	6 to 80
8-Strand Plait	1-5/8 to 6	40 to 144



PRIMARY FIBERS UTILIZED

- **Cotton** – A white fibrous vegetable material primarily used in sash cords.
- **Sisal** – A vegetable fiber from the agave plant primarily used as core in wire ropes.
- **Nylon** – A synthetic fiber primarily used in ropes for high elasticity.
- **Polyester** – A synthetic fiber primarily used in ropes for low elasticity.
- **Ultra™* fiber** – A proprietary synthetic olefin fiber primarily used in ropes for light weight and floating capability.
- **Ultra Blue™* fiber** – A proprietary synthetic co-polymer olefin fiber primarily used in ropes for light weight and floating capability.
- **Kevlar®** – A synthetic fiber primarily used in ropes for high heat resistance, low elasticity and high strength.

- **Vectran®** – A synthetic fiber primarily used in ropes for high strength and low elasticity.
- **HMWPE** – Refers to High Molecular Weight Polyethylene fibers (Dyneema® and Spectra®) primarily used in ropes for high strength, low elasticity, and floating capability.
- **UHMWPE** – Refers to Ultra High Molecular Weight Polyethylene fibers (Dyneema® and Spectra®) primarily used in ropes for high strength, low elasticity, and floating capability.
- **Technora® fiber** – A synthetic fiber primarily used in ropes for low stretch, high strength, and high heat resistance.
- **Polyolefin® fiber** – A floating synthetic fiber primarily used in rope for its light weight.

* Fiber extruded by The American Group.

ENGINEERING SERVICES

Since 1884, The American Group has been designing and manufacturing ropes to meet specific application requirements with technically superior ropes.

Our challenge has always been to have the most complete line of products with a constant and continuing commitment to quality, service and innovation.

Through the years, The American Group has worked closely with the leading fiber manufacturers to develop new products utilizing the latest in fiber technology. Our experience has resulted in the establishment of The American Group's development and testing facilities and the implementation of The American Group Quality Assurance Program.

The development and testing facilities maintain fully certified testing capabilities for break testing up to 300,000 pounds; wet and dry abrasion testing; rope analysis for construction and fiber type; and rope termination expertise and development.

To ensure The American Group's products consistently meet the highest standards, we have developed a Quality Assurance Program that complies with the requirements of ISO 9001. Routine inspections, analysis, and testing of finished products assures the highest quality. Computer generated production documents and individual specifications for all products mean that The American Group's products consistently meet the highest standards.

DEVELOPMENT AND TESTING FACILITIES

- Certified testing equipment for performing elongation and break testing of ropes up to 300,000 pounds.
- Wet and dry accelerated and reverse bend abrasion testing.
- Certified testing equipment for performing elongation and break testing of fiber.
- Rope analysis for construction and fiber type.
- Extraction testing for lubricant content of rope.
- Termination evaluation and development.
- Member of the Cordage Institute

We were one of the first US rope manufacturers to receive ISO 9001 certification. This was a natural progression of our already existing Quality Assurance program which incorporates:

- Computer generated production documents.
- Specialized production documents for the processing of high modulus fibers.
- Standardized procedures for inspection, analysis, and testing of in-process production as well as finished products.
- Individual specifications for all products.

The American Group will insure that our products consistently meet the highest standards. The same standards users of our products have come to rely upon. We welcome the opportunity to assist in any challenge to develop viable solutions to operational strength member problems.



Product Offering

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FIBER CHARACTERISTICS

1. Bulk Strength is defined as strength per circumference squared.
2. Working is defined as rope actually in use under a cycling load.
3. Coefficient of Friction is based on reluctance to slip or slide.
4. Critical Temperature is defined as the point at which degradation is caused by temperature alone.
5. Cold Flow (Creep) is defined as fiber deformation (elongation) due to molecular slippage under a constant static loading situation. Fibers that have this inherent characteristics will display extremely low or negligible creep if minor fluctuations occur in the rate and/or frequency of load levels. In rope form, this would apply to polypropylene and HMWPE fibers such as Spectra® and Dyneema®

GENERIC FIBER TYPE	NYLON	POLYESTER	POLYPROPYLENE	HMWPE	KEVLAR	TECHNORA
Bulk Strength¹	1.0	.9 - 1.1	.55	2.8	2.7	2.9
Weight*	1.0	1.21	.80	.85	1.26	1.22
Working Elastic Elongation²	1.0	.60	.80	.10	.10	.10
Coefficient of Friction³	.10 - .12	.12 - .15	.15 - .22	.08	.10 - .12	.12 - .15
Melting Point	460°F	480°F	330°F	297°F	Chars at 800°F	Chars at 900°F
Critical Temperature⁴	350°F	350°F	250°F	150°F	400°F	450°F
Specific Gravity	1.14	1.38	.91	.97	1.44	1.39
Cold Flow (Creep)⁵	Negligible	Negligible	Negligible to High	Negligible to High	Negligible	Negligible

ROPE CONSTRUCTION

All sizes stated are nominal diameters and do not reflect exact dimensions. Weights depicted are average net rope weights relaxed and standard tolerances are ± 5% unless agreed to in writing.



3-Strand Twisted

See pages 6 - 11.

8-Strand Plaited

See pages 12 - 14

12-Strand Single Braid

See pages 16 - 24

2-in-1 Double Braid

See pages 25 - 27

Parallel Braid Core

See page 28

Parallel Fiber Core

See page 29

SAMTHANE™ COATINGS

Samthane Coatings are a family of abrasion resistant coatings which are specifically formulated to match end-user requirements and specific rope constructions. The advantages and differences of these coatings are outlined below.

ADVANTAGES	
• Improves service life	• Prevents contamination
• Reduces snagging	• Reduces cutting
• Enhances abrasion resistance	• Color coding for identification

The American Group provides advanced technology in developing protective coatings and other chafe protection materials. If you have specialized requirements and need a wear problem solved, contact our Specialty Products Manager at the Ferndale facility.

SAMTHANE COATINGS KEY

- ▼ This symbol indicates standard colors are Orange and Green. Other colors available on a special order basis.
- ▼▼ This symbol indicates Clear coating is standard. Other colors available on a special order basis.
- ▲ This symbol indicates color of coating may be specified as Red, Yellow, Blue, Orange, Green or Black.
- ▲▲ This symbol indicates Grey is the standard color. Other colors available on a special order basis.
- ▲▼ This symbol indicates color of coating may be specified as Red, Green, Blue or Black.
- ▼▲ This symbol indicates blue is the standard color. Other colors available on a special order basis.

SAMTHANE TYPE A

Spliceable coating used on polyester fiber double braids. Currently available on Stable Braid and Spectron II. Samthane Type A greatly enhances abrasion resistance, helps keep contaminants from entering the rope making it easier to resplice used rope. Available in a variety of colors for easy identification, tracking time in service, keying colors to specific operations, etc. Splices, new and used, utilizing the same technique and tools used for uncoated rope. Coating adds approximately 3 – 5% weight to the line.

SAMTHANE SELECTOR				
Property	Samthane A	Samthane F	Samthane C	Samthane S
Spliceability	Yes	Yes	No	Yes
Shore Hardness	N. A.	N. A.	85 A	N. A.
Break Strength	2,500 psi	2,500 psi	5,400 psi	5,000 psi
Elongation at Break	610%	610%	450%	250%
Modulus at 300%	600 psi	600 psi	1,900 psi	N. A.
Type	Aromatic Urethane	Aromatic Urethane	Polyether Urethane	Aromatic Urethane

SAMTHANE TYPE F

Spliceable coating specially formulated for coating Dura-Plex. Physical properties are the same as Type A coating. Adds approximately 3 - 5% weight to line.

SAMTHANE TYPE C

Non-spliceable jacketing type coating usually applied to specific sections of a line which will be subjected to extreme abrasion. The coating is very tough, with excellent resistance to cutting and chaffing. Usually applied to a thickness of 1/8", or more, which has a stiffening effect on the rope. Applied on pre-spliced ropes. This material is also used for thimble encapsulation.

SAMTHANE TYPE S

Spliceable coating used on HWMPE, olefin, and polyester fiber ropes. A coating that adds firmness and greatly improves wear life. The coating will add approximately 3 - 5 % weight to the rope. Supplied on Spectron 12 and Tenex as a standard product. Available on other products per special order requirements.



PRO-GARD™ MARINE FINISH

NYLON ROPES

The American Group has integrated the use of Pro-Gard™ marine finish for specific braided nylon products to ensure the Marine Industry maximum working strength and wear. As a result of using the best, you can start with maximum wet working strength – a standard nylon can lose 15% or more of its dry strength after being wet. Double your wear life and receive wet working strengths with the following products:

- Round Plait Nylon
- 3-Strand Pro-Set Nylon
- 2-in-1 Super Strong
- 8-Strand Pro-Set Nylon

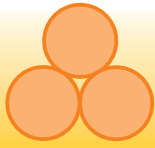
POLYESTER ROPES

By developing a unique marine fiber finish and application process, The American Group can offer braided polyester products that will outwear standard polyester ropes by at least 5 times in wet use. Our special Pro-Gard™ marine finish for polyester does not migrate; it stays with the rope to give the service life and reliability needed for the Marine Industry. The following products utilize our Pro-Gard™.

- Round Plait SSR-1200
- 2-in-1 Stable Braid
- Round Plait Polyester
- 8-Strand Premium Polyester

Maximize wet service life and reliability by using the above products in a wet environment. Refer to and ask for Samson Test Method 101 for evaluating fiber finish performance for wet and dry applications.

ULTRALINE® Three - Strand Product Code: 6N



3-Strand
Ultra™ Fiber

A regular lay three-strand floating rope with high tenacity and excellent wear life.

Ultraline® is produced from exclusive high tenacity orange Ultra™ olefin fiber which

allows it to yield 20 to 25% higher strength than standard yellow polypropylene ropes with twice the wear life. Its unique orange color with the proprietary red and green I.D. markers give high visibility and product identification. The performance characteristics of Ultraline® are the proven reason why it has become an accepted economical service life replacement to traditional three-strand polypropylene.

CHARACTERISTICS

- 20 - 25% stronger than polypropylene
- Two times the wear life of polypropylene
- Superior sunlight resistance to polypropylene due to our SL-5 ultraviolet inhibitors
- Excellent visibility identification

APPLICATIONS

- Hand and Block Lines
- Pulling Lines
- Slings and Mooring Pendants
- Mooring and Tie-Up Lines
- Floating Tow Lines

Fiber Content: Ultra™ Fiber

Specific Gravity:91 (Floats)

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.9	4.2	6.5

3-STRAND ULTRALINE

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.1	1.6	1,600	726	1,450	658
5/16"	8	1"	24	1.8	2.7	2,300	1,043	2,100	953
3/8"	9	1-1/8"	27	2.8	4.2	3,500	1,588	3,170	1,438
7/16"	11	1-1/4"	33	3.7	5.5	4,600	2,087	4,100	1,860
1/2"	12	1-1/2"	36	4.5	6.7	5,400	2,449	4,900	2,223
9/16"	14	1-3/4"	42	6.0	8.9	6,600	2,994	5,980	2,713
5/8"	16	2"	48	7.4	11.0	8,100	3,674	7,280	3,302
3/4"	18	2-1/4"	54	10.5	15.6	11,100	5,035	9,950	4,513
7/8"	22	2-3/4"	66	14.4	21.4	15,000	6,804	13,500	6,124
1"	24	3"	72	17.7	26.3	18,400	8,346	16,600	7,530
1-1/8"	28	3-1/2"	84	23.4	34.8	24,300	11,022	21,900	9,934
1-1/4"	30	3-3/4"	90	26.5	39.4	27,400	12,429	24,700	11,204
1-1/2"	36	4-1/2"	108	37.6	56.0	38,900	17,645	35,000	15,876
1-5/8"	40	5"	120	46.4	69.1	47,200	21,410	42,500	19,278
1-3/4"	44	5-1/2"	132	57.7	85.9	58,300	26,445	52,500	23,814
2"	48	6"	144	67.5	100.5	67,800	30,754	61,000	27,670
2-1/8"	52	6-1/2"	156	78.9	117.4	78,900	35,789	71,000	32,206
2-1/4"	56	7"	168	90.7	135.0	90,000	40,824	81,000	36,742
2-1/2"	60	7-1/2"	180	105.2	156.6	104,400	47,356	94,000	42,638
2-5/8"	64	8"	192	118.6	176.5	117,200	53,162	105,500	47,855
2-3/4"	68	8-1/2"	204	135.1	201.1	133,300	60,465	120,000	54,432
3"	72	9"	216	149.5	222.5	147,800	67,042	133,000	60,329
3-1/4"	80	10"	240	185.6	276.2	177,800	80,650	160,000	72,576

ULTRA BLUE™ Three - Strand Product Code: V6



Ultra Blue™ rope constructions are truly a major development in comparison to traditional polypropylene ropes. Ultra Blue™ ropes utilize our proprietary Ultra Blue™ copolymer

olefin fiber. This maximum strength fiber creates ropes that are 30 to 35% higher in strength than equivalent polypropylene constructions.

This fiber gives Ultra Blue™ ropes up to three times the wear life over polypropylene. The unique fiber surface develops excellent grip capability while adding to the surface wear life. The overall strength and wear features give the opportunity of down-sizing while maintaining longer wear life over standard polypropylene ropes.

CHARACTERISTICS

- 30 – 35% stronger than polypropylene
- Floats
- Excellent flex wear resistance
- Superior ultraviolet resistance over polypropylene

APPLICATIONS

- Mooring and Tie-Up Lines
- Floating Tow Lines
- Slings and Mooring Pendants
- Hand and Block Lines
- Pulling Lines

Fiber Content: Ultra Blue™ Fiber

Specific Gravity:94 (Floats)

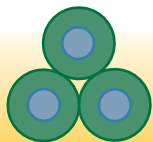
Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
2.0	4.8	6.8

3-STRAND ULTRA BLUE									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.1	1.6	1,700	771	1,500	680
5/16"	8	1"	24	2.1	3.1	2,600	1,179	2,300	1,043
3/8"	9	1-1/8"	27	2.6	3.9	3,700	1,678	3,300	1,497
7/16"	11	1-1/4"	33	3.1	4.6	4,600	2,087	4,100	1,860
1/2"	12	1-1/2"	36	4.5	6.7	6,100	2,767	5,500	2,495
9/16"	14	1-3/4"	42	6.3	9.4	8,400	3,810	7,600	3,447
5/8"	16	2"	48	7.5	11.2	10,600	4,808	9,500	4,309
3/4"	18	2-1/4"	54	10.2	15.2	12,000	5,443	10,800	4,899
7/8"	22	2-3/4"	66	15.8	23.5	18,000	8,165	16,200	7,348
1"	24	3"	72	18.6	27.7	22,600	10,251	20,300	9,208
1-1/8"	28	3-1/2"	84	24.7	36.8	26,600	12,066	23,900	10,841
1-1/4"	30	3-3/4"	90	28.9	43.0	33,000	14,969	29,700	13,472
1-1/2"	36	4-1/2"	108	32.5	48.4	37,000	16,783	33,300	15,105
1-5/8"	40	5"	120	41.2	61.3	42,000	19,051	37,800	17,146
1-3/4"	44	5-1/2"	132	52.6	78.3	55,000	24,948	49,500	22,453
2"	48	6"	144	61.9	92.1	65,000	29,484	58,500	26,536
2-1/8"	52	6-1/2"	156	73.2	108.9	78,000	35,381	70,200	31,843
2-1/4"	56	7"	168	86.6	128.9	85,000	38,556	76,500	34,700
2-1/2"	60	7-1/2"	180	101.0	150.3	103,000	46,721	92,700	42,049
2-5/8"	64	8"	192	115.5	171.9	118,000	53,525	106,200	48,172
2-3/4"	68	8-1/2"	204	130.9	194.8	133,000	60,329	119,700	54,296
3"	72	9"	216	168.0	250.0	167,000	75,751	150,300	68,176
3-1/4"	80	10"	240	208.2	309.8	205,000	92,988	184,500	83,689



SSR-100™ Three - Strand Product Code: 71



3-Strand Polyester Fiber with Ultra Blue™ Fiber Inside

A combination fiber rope that generates excellent wear and high strength to weight. SSR-100™ is produced with high strength plied filament polyester surface yarns wrapped over our high tenacity Ultra Blue™ fiber which gives the rope a distinctive blue sheen. This balanced rope construction offers the durability features of polyester

and higher strengths than other combination ropes due to the Ultra Blue™ fiber. The superior wear SSR-100™ generates over standard combination ropes makes it a more reliable and economic rope. Look for the blue centers to insure it is an SSR-100™ product.

Fiber Content: Polyester and Ultra Blue™ Fiber

Specific Gravity: 1.18

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.6	3.5	4.7

CHARACTERISTICS

- High flex wear resistance
- Excellent weight to strength ratio
- A balanced, plied yarn construction
- Higher surface heat resistance than all-polypropylene ropes

APPLICATIONS

- Hand and Block Lines
- Pulling Lines
- Deck Handy Lines
- Mooring and Tie-Up Lines

3-STRAND SSR-100									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/16"	5	9/16"	15	0.8	1.2	1,000	454	900	408
1/4"	6	3/4"	18	1.4	2.1	1,800	816	1,620	735
5/16"	8	1"	24	2.4	3.6	2,800	1,270	2,520	1,143
3/8"	9	1-1/8"	27	3.9	5.8	4,100	1,860	3,690	1,674
7/16"	11	1-1/4"	33	4.9	7.3	5,100	2,313	4,590	2,082
1/2"	12	1-1/2"	36	6.5	9.7	6,900	3,130	6,210	2,817
9/16"	14	1-3/4"	42	8.5	12.6	9,100	4,128	8,190	3,715
5/8"	16	2"	48	9.5	14.1	10,000	4,536	9,000	4,082
3/4"	18	2-1/4"	54	13.5	20.1	14,500	6,577	13,050	5,919
7/8"	22	2-3/4"	66	17.7	26.3	18,700	8,482	16,830	7,634
1"	24	3"	72	22.0	32.7	23,750	10,773	21,375	9,696
1-1/8"	28	3-1/2"	84	25.0	37.2	26,600	12,066	23,940	10,859
1-1/4"	30	3-3/4"	90	30.0	44.6	31,000	14,062	27,900	12,655

PRO-MASTER™ Three - Strand Product Code: 176



3-Strand Spun and Filament Polyester Jacket Fibers Covering Polyolefin Core Fibers.

A firm, balanced three-strand construction with superior hand and lock-grip holding capability. This product offers flexibility but keeps its shape under heavy use. The combination of spun and filament polyester develop a rope with low stretch and excellent knot holding. The construction's firmness virtually eliminates the hockling tendency of standard lay three-strand even in long

continuous lengths. Pro-Master™ is a superior rope for rigging due to its light weight, low stretch, excellent grip and high strength.

CHARACTERISTICS

- Stays firm and gives excellent hold/grip
- High strength and low stretch
- Excellent chemical and ultraviolet resistance
- Balanced, hockle-resistant construction

APPLICATIONS

- Vertical Life Lines
- Stage Counter Weight Rope
- Arborist Rigging Line
- Hand and Block Lines

Fiber Content: Polyester and Polyolefin fiber

Specific Gravity: 1.24

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
2.0	3.2	3.9

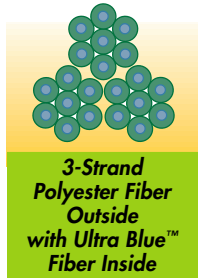
Water Absorption Fiber: 1-2%

3-STRAND PRO-MASTER									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/2"	12	1-1/2"	36	5.7	8.5	5,800	2,631	5,220	2,368
5/8"	16	2"	48	9.5	14.1	8,200	3,720	7,380	3,348
3/4"	18	2-1/4"	54	12.5	18.6	10,800	4,899	9,720	4,409
7/8"	22	2-3/4"	66	18.0	26.8	15,500	7,031	13,950	6,328
1"	24	3"	72	22.0	32.7	18,700	8,482	16,830	7,634

SSR-1200™

Three - Strand
Product Code: W7

3-STRAND



The maximum strength and wear resistant combination rope produced. SSR-1200™ ropes are a

compound plied yarn construction that utilizes the ultimate compatibility of filament polyester and Ultra Blue™ fibers.

The unique combination allows strength and wear equal to an all-polyester rope with significant weight reduction. Its service life advantages have been proven in operational use – not just in our laboratory testing. Based on weight, strength and service wear life it is the maximum combination rope available. The red and green I.D. markers and blue center yarns make it an SSR-1200™ product.

CHARACTERISTICS

- Highest wear and strength combination rope available
- 20% lower weight than polyester ropes
- Low working elongation
- Superior flex wear resistance

APPLICATIONS

- Deck Handy Lines
- Hand and Block Lines
- Mooring Lines
- Tug Assist Lines

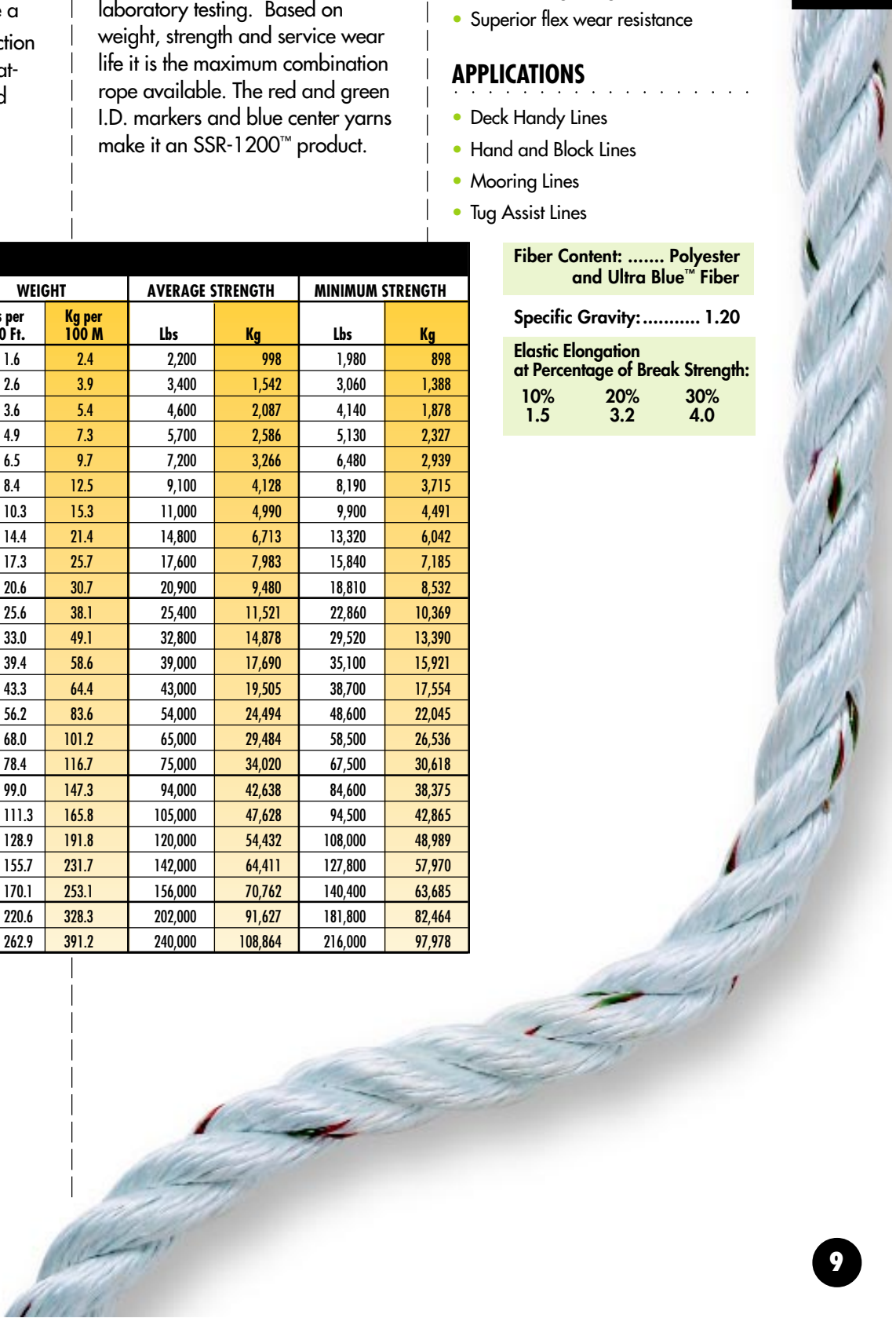
3-STRAND SSR-1200									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.6	2.4	2,200	998	1,980	898
5/16"	8	1"	24	2.6	3.9	3,400	1,542	3,060	1,388
3/8"	9	1-1/8"	27	3.6	5.4	4,600	2,087	4,140	1,878
7/16"	11	1-1/4"	33	4.9	7.3	5,700	2,586	5,130	2,327
1/2"	12	1-1/2"	36	6.5	9.7	7,200	3,266	6,480	2,939
9/16"	14	1-3/4"	42	8.4	12.5	9,100	4,128	8,190	3,715
5/8"	16	2"	48	10.3	15.3	11,000	4,990	9,900	4,491
3/4"	18	2-1/4"	54	14.4	21.4	14,800	6,713	13,320	6,042
13/16"	20	2-1/2"	60	17.3	25.7	17,600	7,983	15,840	7,185
7/8"	22	2-3/4"	66	20.6	30.7	20,900	9,480	18,810	8,532
1"	24	3"	72	25.6	38.1	25,400	11,521	22,860	10,369
1-1/8"	28	3-1/2"	84	33.0	49.1	32,800	14,878	29,520	13,390
1-1/4"	30	3-3/4"	90	39.4	58.6	39,000	17,690	35,100	15,921
1-5/16"	32	4"	96	43.3	64.4	43,000	19,505	38,700	17,554
1-1/2"	36	4-1/2"	108	56.2	83.6	54,000	24,494	48,600	22,045
1-5/8"	40	5"	120	68.0	101.2	65,000	29,484	58,500	26,536
1-3/4"	44	5-1/2"	132	78.4	116.7	75,000	34,020	67,500	30,618
2"	48	6"	144	99.0	147.3	94,000	42,638	84,600	38,375
2-1/8"	52	6-1/2"	156	111.3	165.8	105,000	47,628	94,500	42,865
2-1/4"	56	7"	168	128.9	191.8	120,000	54,432	108,000	48,989
2-1/2"	60	7-1/2"	180	155.7	231.7	142,000	64,411	127,800	57,970
2-5/8"	64	8"	192	170.1	253.1	156,000	70,762	140,400	63,685
3"	72	9"	216	220.6	328.3	202,000	91,627	181,800	82,464
3-1/4"	80	10"	240	262.9	391.2	240,000	108,864	216,000	97,978

Fiber Content: Polyester and Ultra Blue™ Fiber

Specific Gravity: 1.20

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.5	3.2	4.0



SSR-301R™

**Three - Strand
Product Code: 7R**



3-Strand Polyester Fiber Outside with Ultra Strong™ Fiber Inside

SSR-301R™ is the ultimate lockline specifically designed by The American Group to virtually eliminate “slipstick” in locklines when checking barges.

The 3-strand rope construction develops a high strength, lightweight and controlled smooth checking line that has double the wear life of standard lockline ropes. This is accomplished by our unique fiber and internal Resistex® lubricant.

The fiber utilized in each of the three strands of SSR-301R™ are produced, processed and controlled by our Quality Assurance Program. This insures a documented monitoring of

base fiber materials that are used to produce this high performing product. The core fiber of each strand is orange Ultra Strong™ copolymer yarn that is 35% stronger than standard polypropylene fiber. The core fiber of each strand then has our internally produced outer cover of high tenacity spun-filament polyester fiber plied over it.

The outer cover of spun-filament polyester allows for excellent wear and heat resistance. To enhance and maximize the rope performance we add our exclusive Resistex® lubricant to the core yarns which constantly lubricates the outer surface fibers when working loads are applied. This constant migration of Resistex® lubricant to the surface yarns maximizes rope wear life, allows consistent checking ability and minimizes heat build-up during checking.

SSR-301R is the most long-term cost effective lockline available.

CHARACTERISTICS

- Smooth checking
- Virtually no “slipstick”
- High strength
- Excellent resistance to wear

APPLICATIONS

- Locklines

Fiber Content: Ultra Strong™ and Spun & Filament Polyester Fiber

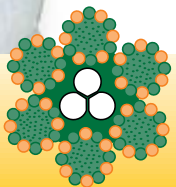
Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
2.1	3.5	4.0

3-STRAND SSR-301

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-1/2"	36	4-1/2"	108	46.9	69.8	43,300	19,641	39,000	17,690
1-5/8"	40	5"	120	57.5	85.6	52,000	23,587	46,800	21,228
2"	48	6"	144	82.0	122.0	71,100	32,251	64,000	29,030



6-Strand Polyester and Polyolefin Fiber Cover, Polyester Core 3-Strand Nylon Inner Core

JETKORE®

Six - Strand Product Code: 35

A specialized synthetic rope designed for use as a ship mooring line. The unique six-strand construction develops a firmly laid rope that works exceptionally well on standard and split winch drums. The six outer strands are internally supported by a left lay three-strand nylon core.

The firm but flexible construction allows excellent handling characteristics but minimizes any “bedding” tendencies on the winch drums. The strength, weight and elongation profile make JetKore® an excellent replacement for wire or all-polyester mooring lines.

CHARACTERISTICS

- High strength to weight ratio
- Low elongation
- Excellent wear resistance
- Light handling weight

APPLICATIONS

- Ship Mooring Lines
- Harbor Towing Lines

Fiber Content: Polyester, Nylon and Polyolefin Fiber

Specific Gravity: 1.22

Elastic Elongation at Percentage of Break Strength:

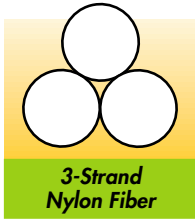
10%	20%	30%
2.7%	5.0%	6.9%

6-STRAND JETKORE

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
2"	48	6"	144	113.4	168.8	100,000	45,360	90,000	40,854
2-1/4"	56	7"	168	154.6	230.1	133,300	60,465	120,000	54,432
2-5/8"	64	8"	192	206.2	306.9	177,800	80,650	160,000	72,576
3"	72	9"	216	257.7	383.5	211,100	95,755	190,000	86,184
3-1/4"	80	10"	240	319.6	475.6	255,600	115,940	230,000	104,328

PRO-SET™ NYLON

Three - Strand
Product Code: 32



**3-Strand
Nylon Fiber**

Rope performance is determined by strength, stretch, wear resistance and handling flexibility characteristics.

A premium three-strand rope should be flexible but firm – thereby maximizing resistance to wear, snagging, hockling and kinking. A premium rope construction should resist effort to open the lay of the rope – higher resistance as diameter increases. The strand of the rope should be developed with

optimum balanced twist to create a firm round strand for maximum wear. The lay of the rope should be uniform and consistently smooth – otherwise the lay tension is out of balance and ultimate strength is affected. Finally, the rope should be heat set and stabilized to assist fiber, twist and lay tension formation to assure all the required characteristics are built into the rope for premium performance.

Pro-Set Nylon™ with Pro-Gard™ marine finish is a quality, heat stabilized, four-stage, three-strand nylon rope.

CHARACTERISTICS

- Consistent dimensionally stable balanced rope for maximum service life
- Heat stabilization pre-shrinks and sets the rope construction to yield full life flexibility
- Long-term superior wet wear and residual strength due to Pro-Gard™ marine finish
- Stabilization and marine finish minimize rope hardening to ensure ease of rope splicing and handling

APPLICATIONS

- Mooring Lines and Tie-Up Lines
- Anchor Lines
- Slings and Lanyards
- Shock and Tow Lines

Fiber Content: Nylon Fiber

Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
5.5	10.0	12.1

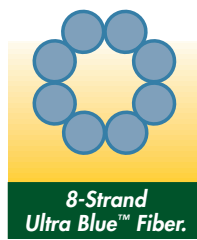
Water Absorption Fiber: 2% – 5%

3-STRAND PRO-SET NYLON									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/16"	5	9/16"	15	1.0	1.5	1,300	590	1,200	544
1/4"	6	3/4"	18	1.5	2.2	1,800	816	1,600	726
5/16"	8	1"	24	2.5	3.7	2,900	1,315	2,600	1,179
3/8"	9	1-1/8"	27	3.5	5.2	4,000	1,814	3,600	1,633
7/16"	11	1-1/4"	33	5.0	7.4	5,300	2,404	4,800	2,177
1/2"	12	1-1/2"	36	6.5	9.7	7,000	3,175	6,300	2,858
9/16"	14	1-3/4"	42	8.1	12.1	8,800	3,992	7,900	3,583
5/8"	16	2"	48	10.5	15.6	11,100	5,035	10,000	4,536
3/4"	18	2-1/4"	54	14.5	21.6	15,000	6,804	13,500	6,124
13/16"	20	2-1/2"	60	17.0	25.3	17,000	7,711	15,300	6,940
7/8"	22	2-3/4"	66	20.0	29.8	21,100	9,571	19,000	8,618
1"	24	3"	72	26.0	38.7	27,800	12,610	25,000	11,340
1-1/16"	26	3-1/4"	78	29.0	43.2	30,200	13,699	27,200	12,338
1-1/8"	28	3-1/2"	84	34.0	50.6	35,600	16,148	32,000	14,515
1-1/4"	30	3-3/4"	90	40.0	59.5	41,700	18,915	37,500	17,010
1-5/16"	32	4"	96	45.0	67.0	46,100	20,911	41,500	18,824
1-1/2"	36	4-1/2"	108	55.0	81.9	57,800	26,218	52,000	23,587
1-5/8"	40	5"	120	66.5	99.0	70,000	31,752	63,000	28,577
1-3/4"	44	5-1/2"	132	83.0	123.5	86,700	39,327	78,000	35,381
2"	48	6"	144	95.0	141.4	98,900	44,861	89,000	40,370
2-1/8"	52	6-1/2"	156	109.0	162.2	112,200	50,894	101,000	45,814
2-1/4"	56	7"	168	129.0	192.0	134,400	60,964	121,000	54,886
2-1/2"	60	7-1/2"	180	149.0	221.7	150,000	68,040	135,000	61,236
2-5/8"	64	8"	192	168.0	250.0	170,000	77,112	153,000	69,401
2-3/4"	68	8-1/2"	204	189.0	281.3	192,200	87,182	173,000	78,473
3"	72	9"	216	210.0	312.5	211,100	95,755	190,000	86,184
3-1/4"	80	10"	240	264.0	392.9	266,700	120,975	240,000	108,864

Sizes 3/16" through 5/16" diameter are produced in a 3-stage, regular lay construction.

ULTRA BLUE™ Eight - Strand

Product Code: W6



Ultra Blue™ rope constructions are truly a major development in comparison to polypropylene ropes. Ultra Blue™ ropes utilize our proprietary Ultra Blue™ copolymer olefin fiber. This maximum strength fiber creates ropes that are 30 to 35% higher strength than equivalent polypropylene construction. This fiber gives Ultra Blue™ ropes up to three times

the wear life over polypropylene. The unique fiber surface develops excellent grip capability while adding to the surface wear life. The overall strength and wear features give the opportunity of down-sizing while maintaining longer wear life over standard polypropylene ropes.

CHARACTERISTICS

- 30 – 35% stronger than polypropylene
- Floats
- Superior ultraviolet resistance over polypropylene
- Excellent flex wear resistance
- Non-torque construction

APPLICATIONS

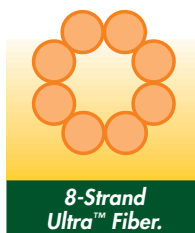
- Floating Tow Lines
- Mooring and Tie-Up Lines
- SPM Mooring Pick-Up Lines

Fiber Content: ... Ultra Blue™ Fiber
 Specific Gravity:94 (Floats)
 Elastic Elongation at Percentage of Break Strength:
 10% 20% 30%
 1.7 3.5 4.2

8-STRAND ULTRA BLUE									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-5/8"	40	5"	120	52.6	78.3	58,000	26,309	52,200	23,678
1-3/4"	44	5-1/2"	132	61.9	92.1	69,000	31,298	62,100	28,169
2"	48	6"	144	73.2	108.9	82,000	37,195	73,800	33,476
2-1/8"	52	6-1/2"	156	86.6	128.9	90,000	40,824	81,000	36,742
2-1/4"	56	7"	168	101.0	150.3	109,000	49,442	98,100	44,498
2-1/2"	60	7-1/2"	180	115.5	171.9	125,000	56,700	112,500	51,030
2-5/8"	64	8"	192	130.9	194.8	140,000	63,504	126,000	57,154
3"	72	9"	216	168.0	250.0	176,000	79,834	158,400	71,850
3-1/4"	80	10"	240	208.2	309.8	216,000	97,978	194,400	88,180
3-5/8"	88	11"	264	249.5	371.3	257,000	116,575	231,300	104,918
4"	96	12"	288	293.8	437.2	305,000	138,348	274,500	124,513

ULTRALINE® Eight - Strand

Product Code: 6P



Ultraline® is produced from our exclusive high tenacity orange Ultra™ olefin fiber. This non-torquing high tenacity rope has excellent wear and floats. Its strength is 20 to 25% higher than standard yellow eight-strand polypropylene ropes with twice the wear life. The unique orange color with the proprietary red and green

I.D. markers give high product visibility and identification. The accepted performance features of Ultraline® are proven reasons why it is an economical replacement for traditional eight-strand polypropylene.

CHARACTERISTICS

- Two times the wear life of polypropylene
- Excellent visibility
- 20 to 25% stronger than polypropylene
- Superior sunlight resistant polypropylene due to our SL-5 ultraviolet inhibitors

APPLICATIONS

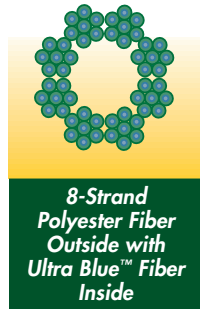
- Mooring and Tie-Up Lines
- Floating Tow Lines
- SPM Mooring Pick-Up Lines
- Barge Lines

Fiber Content: Ultra™ Fiber
 Specific Gravity:91 (Floats)

Elastic Elongation at Percentage of Break Strength:
 10% 20% 30%
 2.3 3.0 4.7

8-STRAND ULTRALINE									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-5/8"	40	5"	120	46.4	69.1	49,400	22,408	44,500	20,185
1-3/4"	44	5-1/2"	132	57.7	85.9	61,100	27,715	55,000	24,948
2"	48	6"	144	67.5	100.5	71,100	32,251	64,000	29,030
2-1/8"	52	6-1/2"	156	78.9	117.4	82,200	37,286	74,000	33,566
2-1/4"	56	7"	168	90.7	135.0	94,400	42,820	85,000	38,556
2-1/2"	60	7-1/2"	180	105.2	156.6	108,900	49,397	98,000	44,453
2-5/8"	64	8"	192	118.6	176.5	122,200	55,430	110,000	49,896
2-3/4"	68	8-1/2"	204	135.1	201.1	138,900	63,005	125,000	56,700
3"	72	9"	216	149.5	222.5	154,400	70,036	139,000	63,050
3-1/4"	80	10"	240	185.6	276.2	186,700	84,687	168,000	76,205
3-5/8"	88	11"	264	226.8	337.5	220,000	99,792	198,000	89,813
4"	96	12"	288	268.0	398.8	258,900	117,437	233,000	105,689
4-1/4"	104	13"	312	318.6	474.1	304,400	138,076	274,000	124,286
4-5/8"	112	14"	336	367.0	546.2	335,600	152,228	302,000	136,987
5"	120	15"	360	421.6	627.4	377,800	171,370	340,000	154,224
5-1/4"	128	16"	384	480.4	714.9	427,800	194,050	385,000	174,636
5-1/2"	136	17"	408	543.3	808.5	482,200	218,726	434,000	196,862
6"	144	18"	432	611.3	909.7	524,400	237,868	472,000	214,099

SSR-1200™ Eight-Strand Product Code: X7



The maximum strength and wear resistant combination rope produced. SSR-1200™ ropes are a compound plied yarn construction that utilizes the ultimate compatibility of filament polyester and Ultra Blue™ fibers. The unique combination allows strength and wear life equal to an all-polyester rope with significant weight reduction. Its service life advantages have been proven in operational use not just in

our laboratory testing. Based on weight, strength and service wear life it is the maximum combination rope available. The red and green I.D. markers and blue center yarns make it an SSR-1200™ product.

CHARACTERISTICS

- Highest wear and strength combination rope available
- 20% lower weight than polyester ropes
- Low working elongation
- Superior flex wear resistance
- Non-torque construction

APPLICATIONS

- Mooring and Tie-Up Lines
- Mooring Pendants
- Tug Assist Lines

8-STRAND SSR-1200									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-5/8"	40	5"	120	68.0	101.2	68,000	30,845	61,200	27,760
1-3/4"	44	5-1/2"	132	78.4	116.7	79,000	35,834	71,100	32,251
2"	48	6"	144	99.0	147.3	99,000	44,906	89,100	40,416
2-1/8"	52	6-1/2"	156	111.3	165.6	110,000	49,896	99,000	44,906
2-1/4"	56	7"	168	128.9	191.8	126,000	57,154	113,400	51,438
2-1/2"	60	7-1/2"	180	155.7	231.7	150,000	68,040	135,000	61,236
2-5/8"	64	8"	192	170.1	253.1	164,000	74,390	147,600	66,951
3"	72	9"	216	220.6	328.3	212,000	96,163	190,800	86,547
3-1/4"	80	10"	240	262.9	391.2	252,000	114,307	226,800	102,876
3-5/8"	88	11"	264	326.8	486.3	312,000	141,523	280,800	127,371
4"	96	12"	288	396.9	590.7	374,000	169,646	336,600	152,682

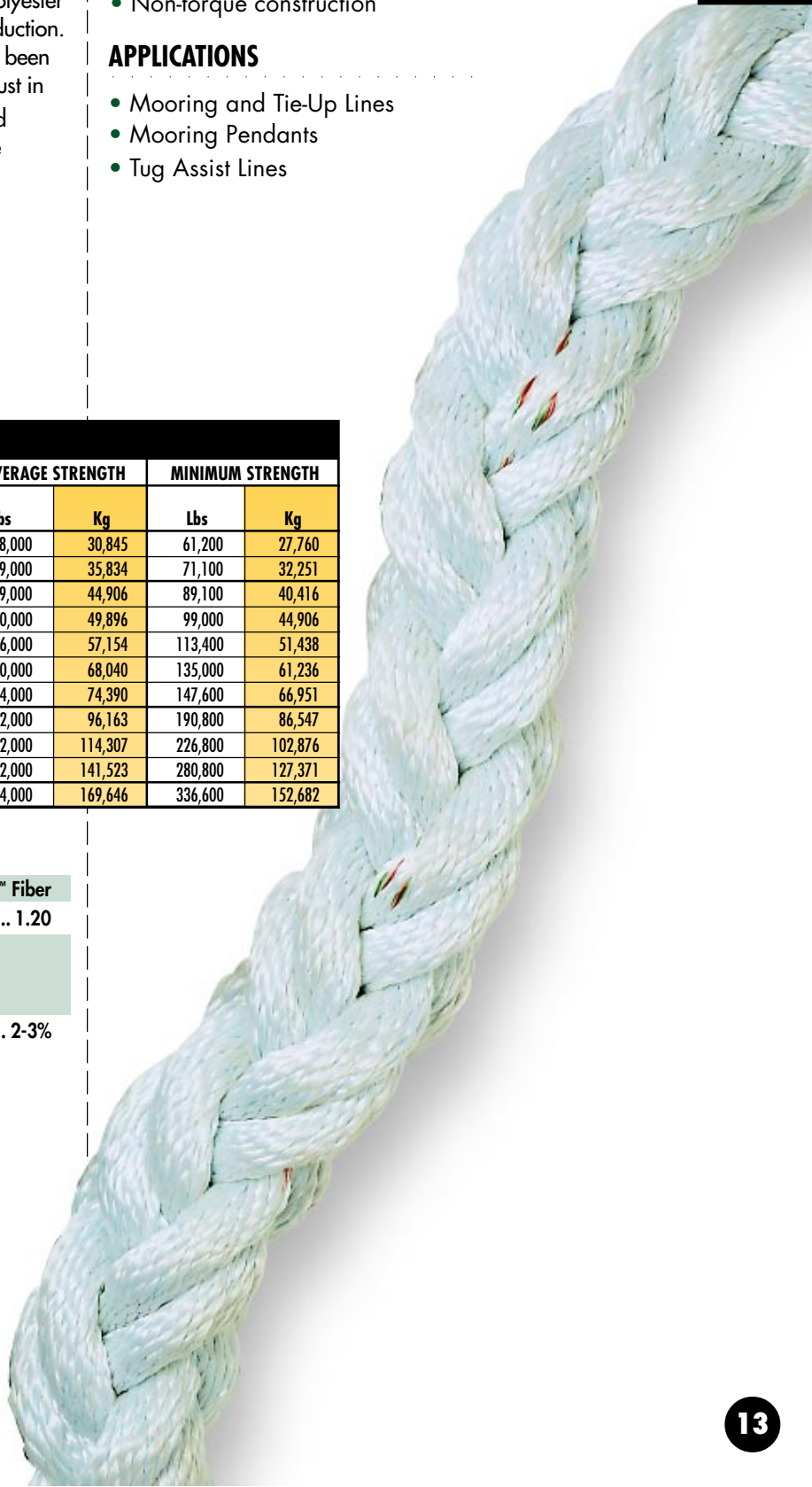
Fiber Content: Polyester and Ultra Blue™ Fiber

Specific Gravity: 1.20

Elastic Elongation at Percentage of Break Strength:

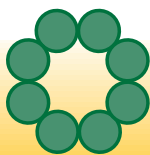
10%	20%	30%
1.4	2.8	3.4

Water Absorption Fiber: 2-3%



PREMIUM POLYESTER

Eight - Strand
Product Code: 48



8-Strand Polyester Fiber

A four-stage, eight-strand plaited construction made of high tenacity polyester with Pro-Gard™ marine finish. This non-torque construction offers excellent strength, low stretch and superior wear. The Pro-Gard™ marine finish creates maximum wear life and assists in maintaining full life flexibility.

CHARACTERISTICS

- High strength and low stretch
- Excellent wear
- Balanced, non-rotational construction

APPLICATIONS

- Mooring and Tie-Up Lines
- Mooring Pendants

8-STRAND PREMIUM POLYESTER

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-5/8"	40	5"	120	84.5	125.8	82,200	37,286	74,000	33,566
1-3/4"	44	5-1/2"	132	101.0	150.3	98,300	44,589	88,500	40,144
2"	48	6"	144	121.6	181.0	115,600	52,436	104,000	47,174
2-1/8"	52	6-1/2"	156	139.2	207.2	133,300	60,465	120,000	54,432
2-1/4"	56	7"	168	161.2	240.9	153,300	69,537	138,000	62,597
2-1/2"	60	7-1/2"	180	186.6	277.7	175,600	79,652	158,000	71,669
2-5/8"	64	8"	192	210.3	313.0	197,800	89,722	178,000	80,741
2-7/8"	68	8-1/2"	204	237.1	352.9	220,000	99,792	198,000	89,813
3"	72	9"	216	266.0	395.9	244,400	110,860	220,000	99,792
3-1/4"	80	10"	240	327.8	487.8	300,000	136,080	270,000	122,472
3-5/8"	88	11"	264	395.9	589.2	361,100	163,795	325,000	147,420
4"	96	12"	288	468.0	696.5	435,600	197,588	392,000	177,811

Fiber Content: Polyester Fiber

Specific Gravity: 1.38

Elastic Elongation at Percentage of Break Strength:

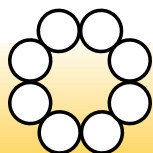
10%	20%	30%
3.0	5.0	7.7

Water Absorption Fiber:

..... 1 to 2%

PRO-SET™ NYLON

Eight - Strand
Product Code: 32



8-Strand Nylon Fiber

Pro-Set™ Nylon with Pro-Gard™ marine finish is a quality heat stabilized four-stage, eight-strand rope. Each strand of the rope is developed with optimum balanced twist to create firm strands for maximum wear. This non-torque construction of premium nylon offers high strength with excellent shock mitigation.

CHARACTERISTICS

- Consistent dimensionally stable balanced rope for maximum service life
- Long-term superior wet wear and residual strength due to Pro-Gard™ marine finish
- Heat stabilization pre-shrinks and sets the rope construction to yield full life flexibility

- Stabilization and marine finish minimize rope hardening to ensure ease of rope splicing and handling

APPLICATIONS

- Mooring Lines
- Shock and Tow Lines
- Mooring Pendants

Fiber Content: Nylon Fiber

Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
5.0	10.2	12.0

8-STRAND PRO-SET NYLON

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-5/8"	40	5"	120	69.3	103.1	75,600	34,292	68,000	30,845
1-3/4"	44	5-1/2"	132	86.5	128.7	93,300	42,321	84,000	38,102
2"	48	6"	144	99.0	147.3	106,700	48,399	96,000	43,546
2-1/8"	52	6-1/2"	156	113.5	168.9	121,100	54,931	109,000	49,442
2-1/4"	56	7"	168	134.4	200.0	144,400	65,500	130,000	58,968
2-1/2"	60	7-1/2"	180	155.2	231.0	162,200	73,574	146,000	66,226
2-5/8"	64	8"	192	175.0	260.4	183,300	83,145	165,000	74,844
2-7/8"	68	8-1/2"	204	196.9	293.0	206,700	93,759	186,000	84,370
3"	72	9"	216	218.8	325.6	227,800	103,330	205,000	92,988
3-1/4"	80	10"	240	275.0	409.3	286,700	130,047	258,000	117,029
3-5/8"	88	11"	264	325.0	483.7	337,800	153,226	304,000	137,894
4"	96	12"	288	395.8	589.0	405,600	183,980	365,000	165,564
4-1/4"	104	13"	312	463.5	689.0	477,800	216,730	430,000	195,048
4-5/8"	112	14"	342	541.7	806.2	564,400	256,012	508,000	230,429
5"	120	15"	360	614.6	914.6	638,900	289,805	575,000	260,820
5-1/4"	128	16"	384	703.1	1,046.4	716,700	325,095	645,000	292,572
5-1/2"	136	17"	429	796.9	1,185.9	775,600	351,812	698,000	316,613
6"	144	18"	432	895.8	1,331.1	886,700	402,207	780,000	353,808

COMPARISON CHARTS AVERAGE STRENGTHS IN POUNDS

3-STRAND ROPES

Diameter	Ultraline	Ultra Blue	SSR-100	Pro-Master	SSR-1200	SSR-301R	Pro-Set Nylon	6-STRAND JetKore	Diameter
3/16"	-	-	1,000	-	-	-	1,300	-	3/16"
1/4"	1,600	1,700	1,800	-	2,200	-	1,800	-	1/4"
5/16"	2,300	2,600	2,800	-	3,400	-	2,900	-	5/16"
3/8"	3,500	3,700	4,100	-	4,600	-	4,000	-	3/8"
7/16"	4,600	4,600	5,100	-	5,700	-	5,300	-	7/16"
1/2"	5,400	6,100	6,900	5,800	7,200	-	7,000	-	1/2"
9/16"	6,600	8,400	9,100	-	9,100	-	8,800	-	9/16"
5/8"	8,100	10,600	10,000	8,200	11,000	-	11,100	-	5/8"
3/4"	11,000	12,000	14,500	10,800	14,800	-	15,000	-	3/4"
13/16"	-	-	-	-	17,600	-	17,000	-	13/16"
7/8"	15,000	18,000	18,700	15,500	20,900	-	21,100	-	7/8"
1"	18,400	22,600	23,750	18,700	25,400	-	27,800	-	1"
1-1/16"	-	-	-	-	-	-	30,200	-	1-1/16"
1-1/8"	24,300	26,600	26,600	-	32,800	-	35,600	-	1-1/8"
1-1/4"	27,400	33,000	31,000	-	39,000	-	41,700	-	1-1/4"
1-5/16"	-	-	-	-	43,000	-	46,100	-	1-5/16"
1-1/2"	38,900	37,000	-	-	54,000	43,300	57,800	-	1-1/2"
1-5/8"	47,200	42,000	-	-	65,000	52,000	70,000	-	1-5/8"
1-3/4"	58,300	55,000	-	-	75,000	-	86,700	-	1-3/4"
2"	67,800	65,000	-	-	94,000	71,100	98,900	100,000	2"
2-1/8"	78,900	78,000	-	-	105,000	-	112,200	-	2-1/8"
2-1/4"	90,000	85,000	-	-	120,000	-	134,400	133,300	2-1/4"
2-1/2"	104,400	103,000	-	-	142,000	-	150,000	-	2-1/2"
2-5/8"	117,200	118,000	-	-	156,000	-	170,000	177,800	2-5/8"
2-3/4"	133,300	133,000	-	-	-	-	192,200	-	2-3/4"
3"	147,800	167,000	-	-	202,000	-	211,100	211,100	3"
3-1/4"	177,800	205,000	-	-	240,000	-	266,700	255,600	3-1/4"

8-STRAND ROPES

Diameter	Ultraline	Ultra Blue	SSR-1200	Pro-Set Nylon	Polyester	Diameter
1-5/8"	49,400	58,000	68,000	75,600	82,200	1-5/8"
1-3/4"	61,100	69,000	79,000	93,300	98,300	1-3/4"
2"	71,100	82,000	99,000	106,700	115,600	2"
2-1/8"	82,200	90,000	110,000	121,100	133,300	2-1/8"
2-1/4"	94,400	109,000	126,000	144,400	153,300	2-1/4"
2-1/2"	108,900	125,000	150,000	162,200	175,600	2-1/2"
2-5/8"	122,200	140,000	164,000	183,300	197,800	2-5/8"
2-3/4"	138,900	-	-	206,700	220,000	2-3/4"
3"	154,400	176,000	212,000	227,800	244,400	3"
3-1/4"	186,700	216,000	252,000	286,700	300,000	3-1/4"
3-5/8"	220,000	257,000	312,000	337,800	361,100	3-5/8"
4"	258,900	305,000	374,000	405,600	435,600	4"
4-1/4"	304,400	-	-	477,800	-	4-1/4"
4-5/8"	335,600	-	-	564,400	-	4-5/8"
5"	377,800	-	-	638,900	-	5"
5-1/4"	427,800	-	-	716,700	-	5-1/4"
5-1/2"	482,200	-	-	775,600	-	5-1/2"
6"	524,400	-	-	866,700	-	6"

ROUND PLAIT™ ULTRA BLUE™

Twelve - Strand
Product Code: 441



12-Strand
Round Plait™
Ultra Blue™ Fiber.

A firm twelve-strand braided rope construction that has high strength and floats. The distinct blue color is created by our exclusive copolymer Ultra Blue™ olefin fiber. This product has maximum wear life due to the firm round flexibility of the construction and the superior wear resistance of our proprietary fiber. The product's wear life is further enhanced due to our SL-5™ ultraviolet inhibitor which maximizes the rope's resistance to sunlight degradation. All Round Plait™ ropes are easily spliced using a standard tuck splice procedure.

CHARACTERISTICS

- High strength floating rope
- Excellent resistance to ultraviolet light
- Flexible non-rotating rope
- Superior wear life

APPLICATIONS

- Mooring Line
- Floating Tow Line
- Tie-Up Lines

Fiber Content: Ultra Blue™
Fiber

Specific Gravity: .. .94 (Floats)

Elastic Elongation
at Percentage of Break Strength:

10%	20%	30%
1.31	2.27	3.27

Water Absorption Fiber: None

ROUND PLAIT ULTRA BLUE									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/4"	18	2-1/4"	54	12.5	18.6	13,500	6,124	12,200	5,534
7/8"	22	2-3/4"	66	17.0	25.3	20,000	9,072	18,000	8,165
1"	24	3"	72	23.3	34.7	25,000	11,340	22,500	10,206
1-1/8"	28	3-1/2"	84	25.5	37.9	27,000	12,247	24,300	11,022
1-1/4"	30	3-3/4"	90	35.0	52.1	38,000	17,237	34,200	15,513
1-5/16"	32	4"	96	38.0	56.6	43,000	19,505	38,700	17,554
1-1/2"	36	4-1/2"	108	44.0	65.5	47,000	21,319	42,300	19,187
1-5/8"	40	5"	120	54.0	80.4	61,000	27,670	54,900	24,903
1-3/4"	44	5-1/2"	132	64.0	95.2	73,000	33,113	65,700	29,802
2"	48	6"	144	74.0	110.1	85,000	38,556	76,500	34,700
2-1/8"	52	6-1/2"	156	87.0	129.5	95,000	43,092	85,500	38,783
2-1/4"	56	7"	168	101.0	150.3	110,000	49,896	99,000	44,906
2-1/2"	60	7-1/2"	180	117.0	174.1	130,000	58,968	117,000	53,071
2-5/8"	64	8"	192	133.0	197.9	145,000	65,772	130,500	59,195
2-3/4"	68	8-1/2"	204	148.0	220.3	157,000	71,215	141,300	64,094
3"	72	9"	216	169.0	251.5	180,000	81,648	162,000	73,483
3-1/4"	80	10"	240	215.0	320.0	227,000	102,967	204,300	92,670
3-5/8"	88	11"	264	250.0	372.1	265,000	120,204	238,500	108,184
4"	96	12"	288	297.0	442.0	315,000	142,884	283,500	128,596

ROUND PLAIT™ SSR-1200™

**Twelve - Strand
Product Code: 770**



**12-Strand
Round Plait™
Polyester Fiber
Outside
Ultra Blue™ Fiber
Inside**

A balanced twelve-strand braid with each strand comprised of a compound yarn construction of high tenacity polyester plied over Ultra Blue™ fiber. The construction offers very high strength with low handling weight and is an excellent replacement for heavier all-polyester ropes. The wet wear resistance of SSR-1200™ is maximized due to the application

of Pro-Gard™ marine finish. This firm flexible non-torque rope has excellent handling qualities and is easily spliced with a standard tuck splice procedure. The blue center strand yarns make it an SSR-1200™ product.

CHARACTERISTICS

- Excellent wear life
- High strength, low stretch
- Non-rotating and easily spliced

APPLICATIONS

- Tug Assist Lines
- Mooring and Pendant Lines
- Barge Tie-Up Lines

Fiber Content: Polyester and Ultra Blue™ Fiber

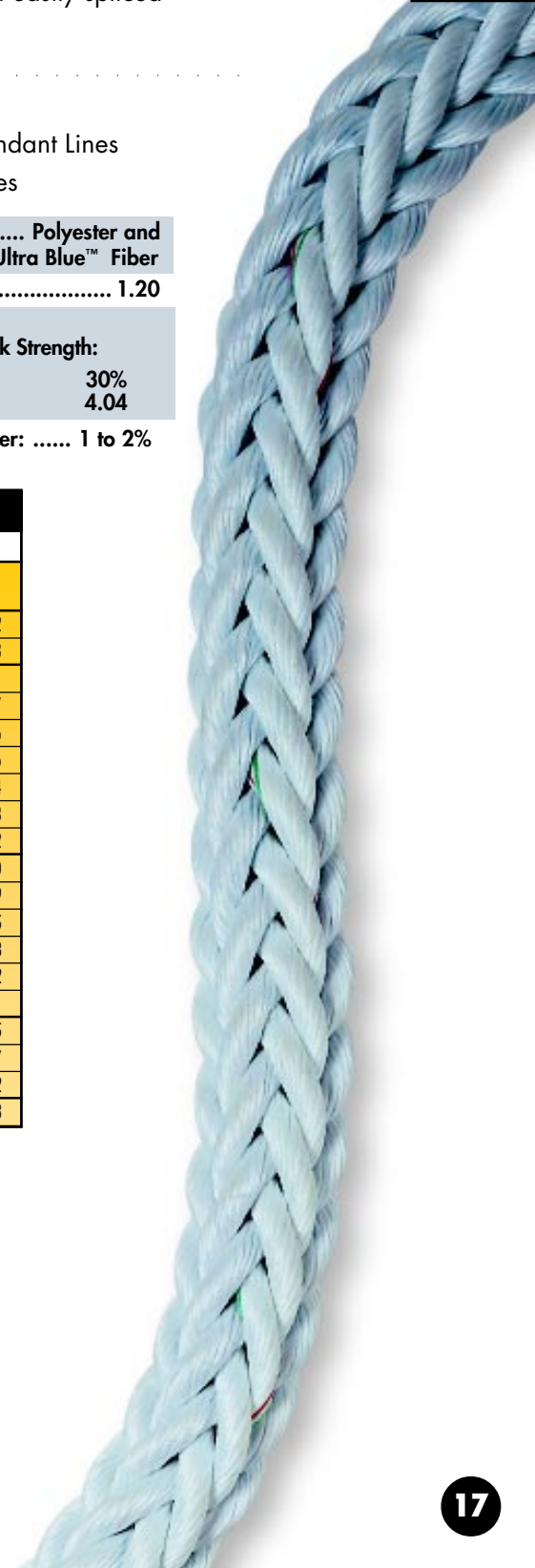
Specific Gravity: 1.20

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.46	2.58	4.04

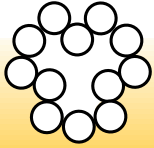
Water Absorption Fiber: 1 to 2%

ROUND PLAIT SSR-1200									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/4"	18	2-1/4"	54	16.0	23.8	16,000	7,258	14,400	6,532
7/8"	22	2-3/4"	66	24.0	35.7	24,000	10,886	21,600	9,798
1"	24	3"	72	30.0	44.6	28,000	12,701	25,200	11,431
1-1/8"	28	3-1/2"	84	35.0	52.1	36,000	16,330	32,400	14,697
1-1/4"	30	3-3/4"	90	39.0	58.0	42,000	19,051	37,800	17,146
1-5/16"	32	4"	96	47.0	69.9	48,000	21,773	43,200	19,596
1-1/2"	36	4-1/2"	108	60.0	89.3	60,000	27,216	54,000	24,494
1-5/8"	40	5"	120	72.0	107.2	72,000	32,659	64,800	29,393
1-3/4"	44	5-1/2"	132	84.0	125.0	84,000	38,102	75,600	34,292
2"	48	6"	144	102.0	151.8	102,000	46,267	91,800	41,640
2-1/8"	52	6-1/2"	156	120.0	178.6	120,000	54,432	108,000	48,989
2-1/4"	56	7"	168	136.0	202.4	139,000	63,050	125,100	56,745
2-1/2"	60	7-1/2"	180	160.0	238.1	163,000	73,937	146,700	66,543
2-5/8"	64	8"	192	176.0	261.9	175,000	79,380	157,500	71,442
2-3/4"	68	8-1/2"	204	199.0	296.2	204,000	92,534	183,600	83,281
3"	72	9"	216	231.0	343.8	230,000	104,328	207,000	93,895
3-1/4"	80	10"	240	286.0	425.6	280,000	127,008	252,000	114,307
3-5/8"	88	11"	264	342.0	509.0	340,000	154,224	306,000	138,802
4"	96	12"	288	413.0	614.6	410,000	185,976	369,000	167,378



ROUND PLAIT™ NYLON

Twelve - Strand
Product Code: 427



12-Strand
Round Plait™
Nylon Fiber

By incorporating our Parallay™ twisting process and Pro-Gard™ marine finish to this nylon rope, high strength and long wearlife are developed for this high energy absorbing product. This unique construction provides a firm, flexible rope with maximum bearing surface for superior

handling and wear. For peak dynamic loads during towing or mooring operations, Round Plait™ Nylon offers excellent shock mitigating properties. The product is easily spliced by a standard tuck splice procedure.

CHARACTERISTICS

- High strength and shock mitigation
- Excellent wet strength retention
- Superior wet wear
- Easily spliced

APPLICATIONS

- Towing and Shock Lines
- Mooring and Pendant Lines
- Deep Water Buoy Lines

Fiber Content: Nylon Fiber

Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
4.2	6.3	8.0

Water Absorption Fiber:

..... 2% to 5%

ROUND PLAIT NYLON				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/4"	18	2-1/4"	54	15.0	22.3	18,400	8,346	16,600	7,530
7/8"	22	2-3/4"	66	22.6	33.6	27,600	12,519	24,800	11,249
1"	24	3"	72	26.3	39.1	32,200	14,606	29,000	13,154
1-1/8"	28	3-1/2"	84	33.8	50.3	41,400	18,779	37,300	16,919
1-1/4"	30	3-3/4"	90	39.5	58.8	48,300	21,909	43,500	19,732
1-5/16"	32	4"	96	45.1	67.1	55,200	25,039	49,700	22,544
1-1/2"	36	4-1/2"	108	56.4	83.9	69,000	31,298	62,100	28,169
1-5/8"	40	5"	120	67.7	100.8	82,800	37,558	74,500	33,793
1-3/4"	44	5-1/2"	132	79.0	117.6	96,600	43,818	86,900	39,418
2"	48	6"	144	95.9	142.7	117,000	53,071	105,300	47,764
2-1/8"	52	6-1/2"	156	113.0	168.2	138,000	62,597	124,200	56,337
2-1/4"	56	7"	168	135.0	200.9	166,000	75,298	149,400	67,768
2-1/2"	60	7-1/2"	180	152.0	226.2	186,000	84,370	167,400	75,933
2-5/8"	64	8"	192	169.0	251.5	207,000	93,895	186,300	84,506
2-3/4"	68	8-1/2"	204	192.0	285.7	235,000	106,596	211,500	95,936
3"	72	9"	216	220.0	327.4	269,000	122,018	242,100	109,817
3-1/4"	80	10"	240	271.0	403.3	315,000	142,884	283,500	128,596
3-5/8"	88	11"	264	321.0	477.7	372,000	168,739	334,800	151,865
4"	96	12"	288	389.0	578.9	449,000	203,666	404,100	183,300

ROUND PLAIT™ POLYESTER Twelve - Strand Product Code: 402



Constructed by utilizing our exclusive Duron™ processing technology with Parallay™ plying. This high tenacity twelve-strand polyester provides superior strength and wear. The firm, Round Plait™ construction is further enhanced for wet wear resistance and maintenance of

service life flexibility through the application of Pro-Gard™ marine finish. The Round Plait™ construction affords maximum bearing surface for excellent performance on bits or capstans. The low stretch affords superior working control and minimum excursion. Round Plait™ constructions are easily spliced by a standard tuck splice procedure.

CHARACTERISTICS

- Non-Rotating, easy to splice
- High strength with low stretch
- Superior working wear life – wet and dry

APPLICATIONS

- Tug Assist Lines
- Mooring and Pendant Lines
- Barge Tie-Up Lines

ROUND PLAIT POLYESTER									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/4"	18	2-1/4"	54	18.8	28.0	17,400	7,893	15,700	7,122
7/8"	22	2-3/4"	66	28.1	41.8	26,200	11,884	23,600	10,705
1"	24	3"	72	35.1	52.2	30,500	13,835	27,500	12,474
1-1/8"	28	3-1/2"	84	41.1	61.2	39,200	17,781	35,300	16,012
1-1/4"	30	3-3/4"	90	45.8	68.2	45,800	20,775	41,200	18,688
1-5/16"	32	4"	96	54.9	81.7	52,300	23,723	47,100	21,365
1-1/2"	36	4-1/2"	108	71.0	105.7	65,400	29,665	58,900	26,717
1-5/8"	40	5"	120	84.8	126.2	78,500	35,608	70,700	32,070
1-3/4"	44	5-1/2"	132	98.7	146.9	91,600	41,550	82,400	37,377
2"	48	6"	144	120.0	178.6	111,000	50,350	99,900	45,315
2-1/8"	52	6-1/2"	156	141.0	209.8	131,000	59,422	117,900	53,479
2-1/4"	56	7"	168	160.0	238.1	151,000	68,494	135,900	61,644
2-1/2"	60	7-1/2"	180	188.0	279.8	177,000	80,287	159,300	72,258
2-5/8"	64	8"	192	207.0	308.1	196,000	88,906	176,400	80,015
2-3/4"	68	8-1/2"	204	234.0	348.2	222,000	100,699	199,800	90,629
3"	72	9"	216	272.0	404.8	255,000	115,668	229,500	104,101
3-1/4"	80	10"	240	337.0	501.5	309,000	140,162	278,100	126,146
3-5/8"	88	11"	264	402.0	598.3	375,000	170,100	337,500	153,090
4"	96	12"	288	486.0	723.3	450,000	204,120	405,000	183,708

Fiber Content: Polyester Fiber

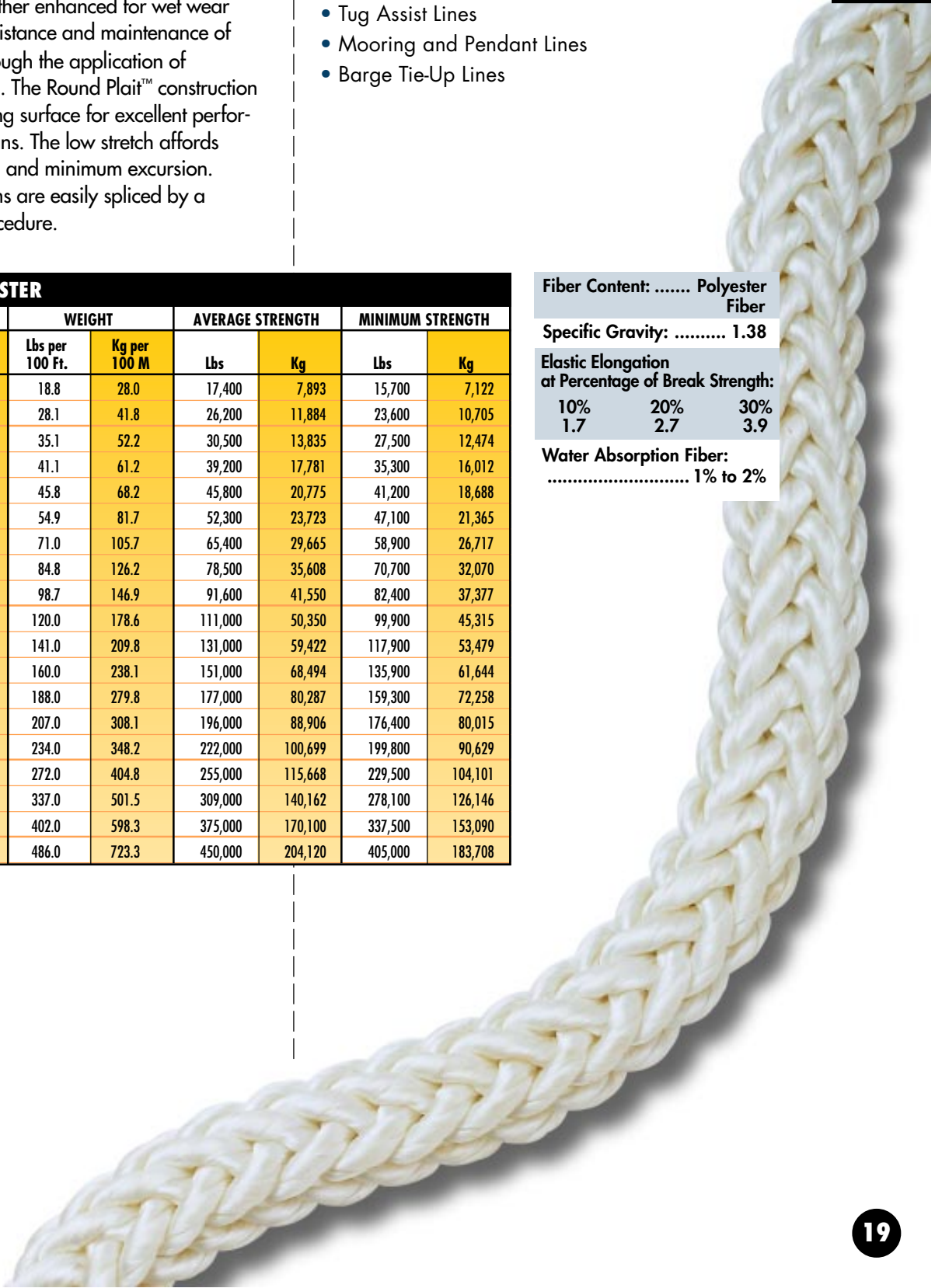
Specific Gravity: 1.38

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.7	2.7	3.9

Water Absorption Fiber:
..... 1% to 2%

12-STRAND



QUIK-SPLICE® POLYTRON™ Twelve - Strand Product Code: 421



12-Strand Ultra Blue™ Fiber

A fast splicing single braid constructed with high strength Ultra Blue™ copolymer olefin fiber. The firm grip body and strength of rope is generated from use of the Ultra Blue™ fiber. Quik-Splice® Polytron™ floats and has very high wet and dry wear abrasion. The Ultra Blue™ fiber has excellent dielectric properties and is extruded with our SL-5™ ultraviolet inhibitor to develop superior resistance to sunlight degradation.

Sizes 1/4" - 7/16" diameter are 8-strand single braid construction.

CHARACTERISTICS

- Fast and easy splicing
- Non-rotational rope
- Firm flexibility with high grip
- Floating high strength rope

APPLICATIONS

- Hand and Block Lines
- Pilot and Pulling Lines
- Buoy Mooring Lines
- Fabricated Slings

QUIK SPLICE POLYTRON

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.1	1.6	1,600	726	1,440	268
5/16"	8	1"	24	1.7	2.5	2,500	1,134	2,250	432
3/8"	9	1-1/8"	27	2.7	4.0	3,600	1,633	3,240	638
7/16"	11	1-1/4"	33	3.5	5.2	4,600	2,087	4,140	823
1/2"	12	1-1/2"	36	4.7	7.0	6,650	3,016	5,985	1,111
5/8"	16	2"	48	7.8	11.6	10,900	4,944	9,810	1,811

Fiber Content: Ultra Blue™ Fiber

Specific Gravity:94 (Floats)

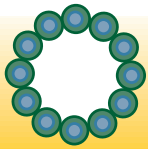
Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.1	1.9	2.6

Water Absorption

Fiber: None

DURA-PLEX™ Twelve - Strand Product Code: 290 (Uncoated); 852 (Samthane™ Coated) ▼



12-Strand Polyester Fibers Plied Over Olefin Fibers

Dura-Plex™ is made using polyester fibers plied over olefin fibers in each of the twelve strands. The composite strands are braided together using the Parallay™ construction to produce a rope with an excellent strength-to-weight ratio.

CHARACTERISTICS

- Easiest splicing of all ropes
- Non-kinking, won't hockle
- Flexible
- High strength-to-weight ratio
- Samthane™ coatings available to enhance abrasion resistance and identification

APPLICATIONS

- Locking Lines
- Distribution Pulling Lines
- Tie-Down Lines
- Hand Lines & Block Lines

DURA-PLEX

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.73	2.57	1,940	880	1,700	771
5/16"	8	1"	24	2.49	3.71	2,600	1,179	2,300	1,043
3/8"	9	1-1/8"	27	3.40	5.06	3,880	1,760	3,500	1,588
7/16"	11	1-1/4"	33	4.62	6.88	5,200	2,359	4,700	2,132
1/2"	12	1-1/2"	36	6.00	8.93	6,700	3,039	6,000	2,722
5/8"	16	2"	48	11.03	16.41	11,600	5,262	10,400	4,717
3/4"	18	2-1/4"	54	14.99	22.31	14,500	6,577	13,100	5,942
7/8"	22	2-3/4"	66	21.50	32.00	21,200	9,616	19,100	8,664
1"	24	3"	72	24.19	36.00	25,000	11,340	22,500	10,206

Fiber Content: Polyester and Olefin Fiber

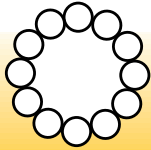
Specific Gravity: 1.20

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.6	2.7	3.8

Water Absorption Fiber: 1% to 2%

PTS-12™ NYLON Twelve - Strand Product Code: 825 (Samthane™ Coated) ▲



12-Strand Nylon Fiber

A twelve-strand single braid nylon construction that is fully heat stabilized and coated with Samthane™ urethane. PTS-12™ Nylon maintains less than 1% wet shrinkage with excellent shock mitigation. The twelve-strand construction is easily spliced and is a non-rotational construction. Its wear life is greatly enhanced from the Samthane™ coating that creates a firm, non-snagging construction. The high strength and superior wear make PTS-12™ an excellent product to replace all other nylon ropes.

CHARACTERISTICS

- Excellent shock mitigation
- Superior strength
- Maintains high service life flexibility
- 30% total stretch at break
- Non-torquing
- Fast, easy splicing

PTS-12 NYLON							
SIZE				WEIGHT		AVERAGE STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg
3/16"	5	9/16"	14	1.2	1.8	1,750	794
1/4"	6	3/4"	18	2.0	3.0	3,000	1,361
5/16"	8	1"	24	3.0	4.5	4,500	2,041
3/8"	9	1-1/8"	27	4.0	6.0	5,900	2,676
7/16"	11	1-1/4"	33	6.0	8.9	8,750	3,969
1/2"	12	1-1/2"	36	8.0	11.9	11,250	5,103
9/16"	14	1-3/4"	42	10.4	15.5	14,000	6,350
5/8"	16	2"	48	12.1	18.0	16,000	7,258
3/4"	18	2-1/4"	54	16.1	24.0	21,000	9,526

APPLICATIONS

- Anchor Lines
- Deep Water Mooring Lines
- Specialty Slings
- Tow Lines

Fiber Content: Nylon Fiber

Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
4.7	6.9	7.7

TENEX™ Twelve - Strand Product Code: 805 (Samthane™ Coated) ▲



12-Strand Polyester Fiber

Tenex is a twelve-strand Samthane™ coated, high tenacity polyester rope offering high strength coupled with low stretch and outstanding abrasion resistance. Its abrasion resistance and firmness is due to special Samthane™ Type "S" coating which allows for easy splicing while enhancing wear life and

snag resistance. Available in long, continuous lengths and a variety of brilliant colors for easy identification.

Tenex single braid is a viable alternative to using 2-in-1® braids when easy field splicing and economy are major considerations.

CHARACTERISTICS

- Very easily spliced
- Non-torquing, non-rotational
- Excellent abrasion and snag resistance
- Selection of five brilliant colors
- Low stretch

APPLICATIONS

- Transmission and Distribution Lines
- Pulling Lines
- Slings
- Fiber Optic Pulling Line

TENEX									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	2.1	3.1	3,240	1,470	2,900	1,315
5/16"	8	1"	24	3.2	4.8	4,720	2,141	4,200	1,905
3/8"	9	1-1/8"	27	4.2	6.3	6,170	2,799	5,500	2,495
7/16"	11	1-1/4"	33	6.3	9.4	9,000	4,082	8,100	3,674
1/2"	12	1-1/2"	36	8.5	12.6	11,800	5,352	10,600	4,808
9/16"	14	1-3/4"	42	10.0	14.9	15,000	6,804	13,500	6,124
5/8"	16	2"	48	13.1	19.5	17,100	7,757	15,300	6,940
3/4"	18	2-1/4"	54	17.2	25.6	22,400	10,161	20,100	9,117
7/8"	22	2-3/4"	66	25.8	38.4	32,600	14,787	29,300	13,290
1"	24	3"	72	34.5	51.3	42,700	19,369	38,400	17,418

Fiber Content: Polyester Fiber

Specific Gravity: 1.38

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.4	2.3	3.0

Water Absorption Fiber: 1% to 2%

AMSTEEL®

Twelve - Strand
Product Code: 815 (Samthane™ coated grey) ▲▲



12-Strand
HMWPE Fiber

High molecular weight polyethylene (HMWPE) fibers and the processing of them into rope constructions has gone through various evolutions of development during the recent past. Our plying and braiding tension control procedures now allow us to offer an HMWPE braid that maximizes strand wear life and product strength while minimizing stretch. Due to slight but constant process and product improvements we have chosen to rename an already proven product to better reflect the company that produces it and its physical capabilities. **Spectron 12™ has now been renamed AmSteel®** to represent the American Group and the strength of steel the product yields.

AmSteel® is a twelve-strand braided rope of tension-set Parallay™ construction of HMWPE fiber with our proprietary Samthane™ urethane coating. It is a non-rotational rope that yields extremely high strength and low stretch equivalent to wire rope with seven times less weight. Combined with its flex-fatigue and service life durability, AmSteel® outlasts wire rope and has none of the handling and safety issues associated with wire rope.

CHARACTERISTICS

- Extremely high strength & low stretch
- Lightweight and flexible
- Superior wear life
- Accommodates 8: 1 D/d sheave ratio
- Excellent dielectric properties

APPLICATIONS

- Mooring Lines
- Face and Wing Wires
- Tug Assist Lines
- Winch Lines
- Pulling Lines
- Specialty Rigging Lines
- Wire Rope Replacement

Fiber Content: HMWPE Fiber
Specific Gravity:98 (Floats)

Elastic Elongation
at Percentage of Break Strength:

10%	20%	30%
0.58	0.87	0.96

Water Absorption Fiber:
..... None

AMSTEEL									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
7/64"	2.5	5/16"	7.5	0.33	0.49	1,200	544	1,080	490
1/8"	3	3/8"	9	0.53	0.79	1,800	816	1,600	726
3/16"	5	9/16"	15	1.04	1.55	3,800	1,724	3,400	1,542
1/4"	6	3/4"	18	1.60	2.38	6,600	2,994	5,900	2,676
5/16"	8	1"	24	2.65	3.94	9,800	4,445	8,800	3,992
3/8"	9	1-1/8"	27	3.71	5.52	14,100	6,396	12,700	5,761
7/16"	11	1-1/4"	33	4.23	6.30	16,500	7,484	14,800	6,713
1/2"	12	1-1/2"	36	6.35	9.45	25,000	11,340	22,500	10,206
9/16"	14	1-3/4"	42	7.90	11.76	30,800	13,971	27,700	12,565
5/8"	16	2"	48	10.61	15.79	40,700	18,462	36,600	16,602
3/4"	18	2-1/4"	54	13.31	19.81	48,000	21,773	43,200	19,596
13/16"	20	2-1/2"	60	15.84	23.57	56,500	25,628	50,800	23,043
7/8"	22	2-3/4"	66	19.61	29.18	67,800	30,754	61,000	27,670
1"	24	3"	72	23.43	34.87	80,000	36,288	72,000	32,659
1-1/16"	26	3-1/4"	78	27.53	40.97	90,000	40,824	81,000	36,742
1-1/8"	28	3-1/2"	84	31.86	47.41	102,000	46,267	91,800	41,640
1-1/4"	30	3-3/4"	90	36.23	53.92	114,000	51,710	102,600	46,539
1-5/16"	32	4"	96	41.71	62.07	127,000	57,607	114,300	51,846
1-1/2"	36	4-1/2"	108	51.70	76.94	157,000	71,215	141,300	64,094
1-5/8"	40	5"	120	65.72	97.80	186,000	84,370	167,400	75,933
1-3/4"	44	5-1/2"	132	78.35	116.60	220,000	99,792	198,000	89,813
2"	48	6"	144	91.40	136.02	250,000	113,400	225,000	102,060
2-1/8"	52	6-1/2"	156	109.00	162.21	300,000	136,080	270,000	122,472
2-1/4"	56	7"	168	122.00	181.56	353,000	160,121	317,700	144,109
2-1/2"	60	7-1/2"	180	148.00	220.25	400,000	181,440	360,000	163,296
2-5/8"	64	8"	192	167.00	248.53	450,000	204,120	405,000	183,708
2-3/4"	68	8-1/2"	204	187.00	278.29	500,000	226,800	450,000	204,120
3"	72	9"	216	206.00	306.57	565,000	256,284	508,500	230,656
3-1/4"	80	10"	240	261.00	388.42	685,000	310,716	616,500	279,644
3-5/8"	88	11"	264	324.00	482.18	850,000	385,560	765,000	347,004
4"	96	12"	288	394.00	586.35	1,000,000	453,600	900,000	408,240
4-1/4"	104	13"	312	455.00	677.13	1,150,000	521,640	1,035,000	469,476
4-5/8"	112	14"	336	516.00	767.91	1,300,000	589,680	1,170,000	530,712

AMSTEEL®-BLUE

Twelve - Strand
Product Code: 830 (Samthane™ coated blue)▼▲

12-STRAND



12-Strand
UHMWPE Fiber

Synthetic fiber and rope design and processing technology have continuously made major strides in development to create synthetic rope products that constantly surpass previously established plateaus of performance. The development of ultra high molecular weight polyethylene (UHMWPE) fiber and our tension-set processing procedure has created an added plus to the continuing replacement of wire rope and its associated disadvantages. Based on our processing improvements and the final rope's performance characteristics **we are re-naming Spectron 12 Plus™ to AmSteel®-Blue** which is more reflective of The American Group and the rope's performance.

AmSteel®-Blue is the latest development of UHMWPE fiber in a twelve-strand braided rope utilizing tension-set Parallay™ design with our proprietary blue Samthane™ urethane coating. This twelve-strand braided rope yields the maximum in strength to weight ratio and is stronger than wire rope constructions – yet it floats. The other major advantage AmSteel®-Blue offers is it also has the best flex-fatigue and wear resistance compared to products made of HMWPE or post-drawn HMWPE fibers. The product's light weight, flexibility, and fast, easy splicing make it truly a unique product.

CHARACTERISTICS

- Maximum strength to weight ratio
- Lowest stretch twelve-strand
- Highest wear and flex-fatigue life
- Non-rotational
- Floats
- Fast and easy to splice
- 40% to 45% stronger than AmSteel®

APPLICATIONS

- Mooring Lines
- Tug Assist Lines
- Face and Wing Wires
- Seismic Tow Lines
- Winch Lines
- Pulling Lines
- Specialty Rigging Lines
- Wire Rope Replacement

AMSTEEL - BLUE

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.60	2.38	9,200	4,173	8,280	3,756
5/16"	8	1"	24	2.65	3.94	13,700	6,214	12,330	5,593
3/8"	9	1-1/8"	27	3.71	5.52	20,445	9,274	18,401	8,347
7/16"	11	1-1/4"	33	4.23	6.30	23,925	10,852	21,533	9,767
1/2"	12	1-1/2"	36	6.35	9.45	36,250	16,443	32,625	14,799
9/16"	14	1-3/4"	42	7.90	11.76	44,660	20,258	40,194	18,232
5/8"	16	2"	48	10.61	15.79	59,015	26,769	53,114	24,093
3/4"	18	2-1/4"	54	13.31	19.81	69,600	31,571	62,640	28,414
13/16"	20	2-1/2"	60	15.84	23.57	81,925	37,161	73,733	33,445
7/8"	22	2-3/4"	66	19.61	29.18	98,310	44,593	88,479	40,134
1"	24	3"	72	23.43	34.87	116,000	52,618	104,400	47,356
1-1/16"	26	3-1/4"	78	27.53	40.97	131,300	59,558	118,170	53,602
1-1/8"	28	3-1/2"	84	31.86	47.41	147,900	67,087	133,110	60,379
1-1/4"	30	3-3/4"	90	36.23	53.92	165,300	74,980	148,770	67,482
1-5/16"	32	4"	96	41.71	62.07	184,150	83,530	165,735	75,177
1-1/2"	36	4-1/2"	108	51.70	76.94	227,650	103,262	204,885	92,936
1-5/8"	40	5"	120	65.72	97.80	283,185	128,453	254,867	115,608
1-3/4"	44	5-1/2"	132	78.35	116.60	334,950	151,933	301,455	136,740
2"	48	6"	144	91.40	136.02	380,625	172,652	342,563	155,387
2-1/8"	52	6-1/2"	156	109.00	162.21	456,750	207,182	411,075	186,464
2-1/4"	56	7"	168	122.00	181.56	537,443	243,784	483,698	219,406
2-1/2"	60	7-1/2"	180	148.00	220.25	588,000	266,717	529,200	240,045
2-5/8"	64	8"	192	167.00	248.53	661,500	300,056	595,350	270,051
2-3/4"	68	8-1/2"	204	187.00	278.29	735,000	333,396	661,500	300,056
3"	72	9"	216	206.00	306.57	830,550	376,737	747,495	339,064
3-1/4"	80	10"	240	261.00	388.42	1,006,950	456,753	906,255	411,077

Fiber Content: . UHMWPE Fiber
Specific Gravity:98 (Floats)

Elastic Elongation
at Percentage of Break Strength:

10%	20%	30%
0.44	0.62	0.79

Water Absorption Fiber:

..... None

TECH 12™

Twelve - Strand
Product Code: 847 (Samthane™ coated) ▲▼



12-Strand
Technora® Fiber

Tech 12™ is a twelve-strand single braid of Technora® fiber with Samthane™ urethane coating. The product has higher strength and lower stretch than products constructed of other types of high modulus aramid fibers. The Samthane™ coating creates enhanced wear resistance but allows very fast splicing capability. Tech 12™ has extremely good heat resistance and flex fatigue service life. Its extremely high strength and low stretch offer the opportunity of replacing wire rope in static applications.

Fiber Content: Technora® Fiber
Specific Gravity: 1.39

Elastic Elongation at Percentage of Break Strength:		
10%	20%	30%
0.63	0.96	1.2

Water Absorption Fiber: None

CHARACTERISTICS

- Negligible creep/cold flow
- High strength and low stretch
- Excellent wear and flexibility
- High heat resistance
- Excellent dielectric properties

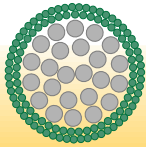
APPLICATIONS

- Specialty Rigging Lines
- Fiber Optic Pulling Lines
- Deep Water Lift Lines
- High Strength Heat Resistant Slings

TECH 12									
Dia. Inch	SIZE			WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/8"	3	3/8"	9	.6	.9	2,800	1,270	2,520	1,143
3/16"	5	9/16"	15	1.3	1.9	5,600	2,540	5,040	2,286
1/4"	6	3/4"	18	1.9	2.8	8,150	3,697	7,335	3,327
5/16"	8	1"	24	3.2	4.8	13,000	5,897	11,700	5,307
3/8"	9	1-1/8"	27	4.3	6.4	18,000	8,165	16,200	7,348
7/16"	11	1-1/4"	33	6.7	10.0	28,000	12,701	25,200	11,431
1/2"	12	1-1/2"	36	8.3	12.4	33,000	14,969	29,700	13,472
5/8"	16	2"	48	13.5	20.1	50,000	22,680	45,000	20,412
3/4"	18	2-1/4"	54	19.3	28.7	65,000	29,484	58,500	26,536
7/8"	22	2-3/4"	66	25.3	37.7	84,000	38,102	75,600	34,292
1"	24	3"	72	31.1	46.3	102,000	46,267	91,800	41,640

SPECTRON II™

Double Braid
Product Code: 394 (Uncoated); 816 (Samthane™ coated)▼



Double Braid Polyester Outside with HMWPE Inside

A double braided rope that derives its high strength from a braided high molecular weight polyethylene (HMWPE) fiber core. The braided polyester cover creates a firm rope and serves as abrasion protection to the strength core. This rope has extremely low elongation and is a lightweight replacement for wire rope. For added wear life and color identification, Spectron II is available with our Samthane™ coating. Whether coated or uncoated, Spectron II is fully sliceable.

CHARACTERISTICS

- Excellent dielectric properties
- High strength to weight ratio
- Superior flex fatigue life
- Non-rotational, low stretch rope

APPLICATIONS

- Utility Winch Lines
- T & D Pulling Lines
- Deep Water Lift Lines
- Fiber Optic Lines
- Alternative to Wire Rope

Fiber Content: Polyester and HMWPE Fiber

Specific Gravity:..... 1.20

Elastic Elongation at Percentage of Break Strength:

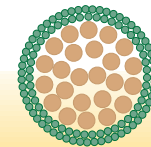
10%	20%	30%
0.5	0.67	0.96

Water Absorption Fiber: 1%

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	2.2	3.3	4,500	2,041	3,800	1,724
5/16"	8	1"	24	3.5	5.2	7,500	3,402	6,400	2,903
3/8"	9	1-1/8"	27	4.1	6.1	9,800	4,445	8,300	3,765
7/16"	11	1-1/4"	33	6.1	9.1	11,700	5,307	9,900	4,491
1/2"	12	1-1/2"	36	8.3	12.4	15,500	7,031	13,200	5,988
9/16"	14	1-3/4"	42	10.0	14.9	22,000	9,979	18,700	8,482
5/8"	16	2"	48	12.6	18.8	27,000	12,247	23,000	10,433
3/4"	18	2-1/4"	54	16.0	23.8	35,000	15,876	29,800	13,517
13/16"	20	2-1/2"	60	20.3	30.2	40,000	18,144	34,000	15,422
7/8"	22	2-3/4"	66	24.8	36.9	50,000	22,680	42,500	19,278
1"	24	3"	72	30.6	45.5	57,000	25,855	48,500	22,000
1-1/16"	26	3-1/4"	78	31.7	47.2	59,300	26,898	50,400	22,861
1-1/8"	28	3-1/2"	84	37.0	55.1	72,900	33,067	62,000	28,123
1-1/4"	30	3-3/4"	90	42.6	63.4	81,000	36,742	68,900	31,253

ULTRA-TECH™

Double Braid
Product Code: 672



Double Braid Polyester Outside with Technora® Inside

Ultra-Tech™ is a double braid rope construction that has its strength and stretch features developed from the braided Technora® core. The braided polyester cover creates a firm flexible working rope and protects the core from external wear. The core dependent spliced rope develops a very high strength,

low stretch, long wearing non-rotational rope. Technora® fiber has excellent flex-fatigue life compared to other high modulus aramid fibers while having higher strength and the same high heat resistance.

CHARACTERISTICS

- High strength and low stretch
- Flexible non-rotational rope
- Excellent dielectric properties
- Negligible creep/cold flow

APPLICATIONS

- T & D Pulling Lines
- Lift Lines
- Specialty Rigging Lines

Fiber Content: Polyester and Technora® Fiber

Specific Gravity:..... 1.38

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
0.63	0.97	1.24

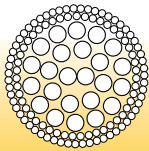
Water Absorption Fiber: 1%

SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
3/16"	5	9/16"	15	1.4	2.1	2,300	1,043	1,955	887
1/4"	6	3/4"	18	2.5	3.7	4,800	2,177	4,080	1,851
5/16"	8	1"	24	3.8	5.7	7,800	3,538	6,630	3,007
3/8"	9	1-1/8"	27	4.8	7.1	10,500	4,763	8,925	4,048
7/16"	11	1-1/4"	33	6.7	10.0	14,800	6,713	12,580	5,706
1/2"	12	1-1/2"	36	9.5	14.1	22,000	9,979	18,700	8,482
5/8"	16	2"	48	14.4	21.4	42,000	19,051	35,700	16,194

DOUBLE BRAID

2-IN-1[®] SUPER STRONG™

Double Braid
Product Code: 509



Double Braid
Nylon Fiber

A double braid of high tenacity nylon fiber treated with Pro-Gard™ marine finish. This firm but flexible product maximizes wet wear life and strength due to the Pro-Gard™ marine finish. It does not shrink harden during service and maintains full performance flexibility for handling. The proven durability of 2-in-1[®] Super Strong™ confirms it is the best wet wearing double braid nylon available.

2-in-1[®] Super Strong™ conforms to U.S. Mil. Spec. MIL-R-24050C, Canadian Spec. 40-GP-16M Type 1/MOT, and NATO Class 4020 Supp. 1972.

Fiber Content: Nylon Fiber

Specific Gravity: 1.14

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
3.0	5.3	6.7

Water Absorption Fiber: to 5%

CHARACTERISTICS

- Maximum wet strength
- Excellent stretch range for shock mitigation
- Torque-free, will not kink or hockle
- Easily spliced
- Maintains full flexibility over service life

APPLICATIONS

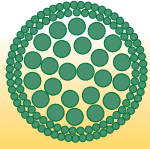
- Mooring and Anchoring Lines
- Mooring Pendants
- Tow Lines

2-IN-1 SUPER STRONG

Dia. Inch	SIZE			WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	1.70	2.53	2,300	1,043	1,840	835
5/16"	8	1"	24	2.60	3.87	3,400	1,542	2,880	1,306
3/8"	9	1-1/8"	27	3.70	5.51	4,900	2,223	4,140	1,878
7/16"	11	1-1/4"	33	5.10	7.59	6,600	2,994	5,640	2,558
1/2"	12	1-1/2"	36	6.60	9.82	8,500	3,856	7,370	3,343
5/8"	16	2"	48	12.00	17.86	15,200	6,895	13,100	5,942
3/4"	18	2-1/4"	54	15.00	22.32	19,100	8,664	16,600	7,530
7/8"	22	2-3/4"	66	22.00	32.74	28,300	12,837	24,700	11,204
1"	24	3"	72	26.00	38.69	33,600	15,241	29,500	13,381
1-1/8"	28	3-1/2"	84	36.00	53.58	45,000	20,412	40,100	18,189
1-1/4"	30	3-3/4"	90	41.00	61.02	52,000	23,587	46,100	20,911
1-5/16"	32	4"	96	47.00	69.95	59,000	26,762	52,400	23,769
1-1/2"	36	4-1/2"	108	60.00	89.29	74,000	33,566	66,300	30,074
1-5/8"	40	5"	120	74.00	110.13	91,000	41,278	81,800	37,104
2"	48	6"	144	106.00	157.75	131,000	59,422	115,000	52,164
2-1/4"	56	7"	168	144.00	214.30	177,000	80,287	152,000	68,947
2-5/8"	64	8"	192	188.00	279.78	230,000	104,328	195,000	88,452
3"	72	9"	216	238.00	354.19	285,000	129,276	243,000	110,225
3-1/4"	80	10"	240	294.00	437.53	322,000	146,059	295,000	133,812
3-5/8"	88	11"	264	356.00	529.80	384,000	174,182	351,000	159,214
4"	96	12"	288	423.00	629.51	451,000	204,574	414,000	187,790
4-1/4"	104	13"	312	497.00	739.64	523,000	237,233	479,000	217,274
4-5/8"	112	14"	336	576.00	857.20	599,000	271,706	549,000	249,026
5"	120	15"	360	662.00	985.19	680,000	308,448	623,000	282,593

2-IN-1[®] STABLE BRAID[™] Double Braid

Product Code: 506 (Uncoated); 800(Samthane[™] Coated)



Double Braid Polyester Fiber

Stable Braid[™] provides a firm polyester rope that yields high strength, low stretch, and excellent wear. The Duron[™] fiber technology which incorporates our Parallay[™] plying, a braiding process which orients all the fibers parallel to the axis of the rope, is the reason that Stable Braid[™] maximizes performance.

To enhance service life for marine applications Pro-Gard[™] marine finish is applied to further enhance wet wear characteristics.

2-in-1[®] Stable Braid[™] conforms to U.S. Mil. Spec. MIL-R-24677 dated 6 November 1986, Canadian Spec. 40-GP-16M Type 3/MOT, and NATO Class 4020 Supp. 1972

2-IN-1 STABLE BRAID									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1/4"	6	3/4"	18	2.5	3.7	2,800	1,270	2,400	1,089
5/16"	8	1"	24	3.6	5.4	4,200	1,905	3,600	1,633
3/8"	9	1-1/8"	27	5.0	7.4	5,600	2,540	4,800	2,177
7/16"	11	1-1/4"	33	6.3	9.4	7,700	3,493	6,500	2,948
1/2"	12	1-1/2"	36	8.9	13.2	10,400	4,717	8,800	3,992
9/16"	14	1-3/4"	42	11.6	17.3	13,300	6,033	11,300	5,126
5/8"	16	2"	48	14.2	21.1	16,300	7,394	13,900	6,305
3/4"	18	2-1/4"	54	18.1	26.9	20,400	9,253	17,300	7,847
7/8"	22	2-3/4"	66	27.1	40.3	29,900	13,563	25,400	11,521
1"	24	3"	72	36.6	54.5	39,200	17,781	33,300	15,105
1-1/8"	28	3-1/2"	84	45.3	67.4	48,200	21,864	41,000	18,598
1-1/4"	30	3-3/4"	90	53.9	80.2	57,300	25,991	48,700	22,090
1-5/16"	32	4"	96	60.8	90.5	64,700	29,348	55,000	24,948
1-1/2"	36	4-1/2"	108	73.3	109.1	75,100	34,065	63,800	28,940
1-5/8"	40	5"	120	85.9	127.8	87,200	39,554	74,100	33,612
2"	48	6"	144	124.0	184.5	124,000	56,246	105,400	47,809
2-1/4"	56	7"	168	173.0	257.5	166,000	75,298	141,100	64,003
2-5/8"	64	8"	192	225.0	334.8	212,000	96,163	180,200	81,739
3"	72	9"	216	300.0	446.5	278,000	126,101	236,300	107,186
3-1/4"	80	10"	240	375.0	558.1	343,000	155,585	291,600	132,270
3-5/8"	88	11"	264	450.0	669.7	407,000	184,615	346,000	156,946
4"	96	12"	288	525.0	781.3	470,000	213,192	399,500	181,213
4-1/4"	104	13"	312	589.0	876.5	533,000	241,769	453,100	205,526
4-5/8"	112	14"	336	689.0	1025.4	616,000	279,418	523,600	237,505
5"	120	15"	360	788.0	788.0	698,000	316,613	593,300	269,121

CHARACTERISTICS

- Firm, torque-free construction
- Low stretch and high strength
- Excellent dielectric properties
- Superior wear resistance – wet or dry

APPLICATIONS

- Mooring Lines and Pendants
- Deep Water Mooring

Fiber Content: Polyester Fiber

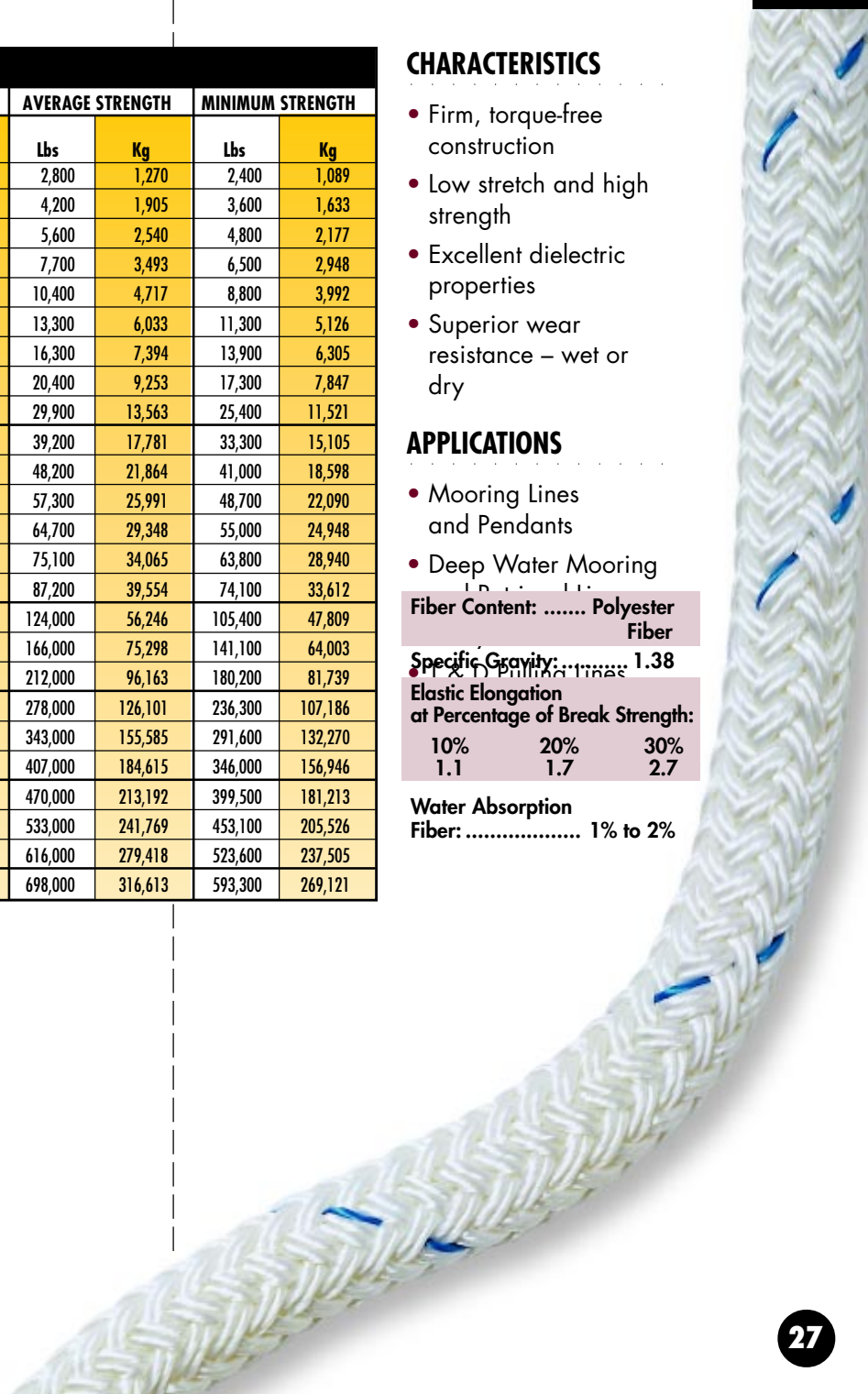
Specific Gravity: 1.38

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
1.1	1.7	2.7

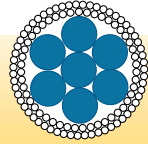
Water Absorption

Fiber: 1% to 2%



MOORING MASTER™ ROPES

Designed to meet the rigors of the marine industry with maximum strength, service life durability and deck handling flexibility with firmness for winch drums. The rope construction consists of seven braided core strength members contained within a thick durable braided chafe protection cover. The braids contained in a braid create cross-sectional firmness but allow good bending flexibility. The Mooring Master™ construction lets the strength cores do their work without being exposed to external wear surfaces. All Mooring Master™ ropes are hand spliceable.



Nylon Outside
UHMWPE Inside

MOORING MASTER™ D-7

The braided core strength members are produced from ultra high molecular weight polyethylene (UHMWPE) fibers that are covered by a braided nylon chafe protection cover. This product floats and has strengths higher than wire rope while being flexible and hand spliceable. It is the lowest stretch, highest strength rope available that floats.

MOORING MASTER™ D-7

Fiber Content: UHMWPE and Nylon Fiber

Specific Gravity: 1.02

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
0.47	0.78	1.07

Water Absorption Fiber: 1%

CHARACTERISTICS

- Low stretch at maximum strength
- Flexibility with firm cross section
- Fully protected strength members
- Lightweight
- Non-rotational

APPLICATIONS

- Ship Mooring Lines
- Deep Water Mooring Lines
- Tug Assist Lines
- Face and Wing Wires

MOORING MASTER™ P-7

Fiber Content: Polyester Fiber

Specific Gravity: 1.38

Elastic Elongation at Percentage of Break Strength:

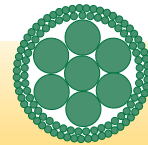
10%	20%	30%
0.96	1.84	2.82

Water Absorption Fiber: 3% to 5%

MOORING MASTER D-7									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1"	24	3"	72	19.30	28.72	112,600	51,075	95,700	43,410
1-1/8"	28	3-1/2"	84	24.18	35.98	140,800	63,867	119,700	54,296
1-1/4"	30	3-3/4"	90	28.88	42.98	169,000	76,658	143,700	65,182
1-1/2"	36	4-1/2"	108	38.65	57.52	225,300	102,196	191,500	86,864
1-5/8"	40	5"	120	43.51	64.75	253,400	114,942	215,400	97,705
1-3/4"	44	5-1/2"	132	50.67	75.41	295,600	134,084	251,300	113,990
1-7/8"	45	5-5/8"	135	59.21	88.12	344,900	156,447	293,200	132,996
2"	48	6"	144	67.61	100.62	394,200	178,809	335,100	152,001
2-1/8"	52	6-1/2"	156	76.08	113.22	443,500	201,172	377,000	171,007
2-1/4"	56	7"	168	86.93	129.37	506,800	229,884	430,800	195,411
2-3/8"	57	7-1/8"	171	96.64	143.82	563,100	255,422	478,600	217,093
2-1/2"	60	7-1/2"	180	106.26	158.14	619,500	281,005	526,600	238,866
2-5/8"	64	8"	192	115.96	172.57	675,800	306,543	574,400	260,548
2-3/4"	68	8-1/2"	204	126.82	188.73	739,100	335,256	628,200	284,952
2-7/8"	69	8-5/8"	207	137.68	204.90	802,500	364,014	682,100	309,401
3"	72	9"	216	152.23	226.55	886,900	402,298	753,900	341,969

MOORING MASTER™ P-7

Mooring Master™ P-7 construction is produced from high tenacity polyester fiber for the seven braided strength cores and braided chafe protection cover. It offers extremely high strength while allowing an excellent deep water mooring profile or higher shock mitigation than UHMWPE fiber ropes. Based on its strength and built-in wear protection, P-7 enables smaller diameters to be used to replace standard polyester rope constructions thereby minimizing weight.

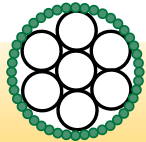


Polyester Outside
Polyester Inside

MOORING MASTER P-7									
SIZE				WEIGHT		AVERAGE STRENGTH		MINIMUM STRENGTH	
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg	Lbs	Kg
1-1/2"	36	4-1/2"	108	54.82	81.58	100,580	45,623	85,493	38,780
1-5/8"	40	5"	120	63.91	95.11	117,340	53,225	99,739	45,242
1-3/4"	44	5-1/2"	132	74.46	110.81	136,900	62,098	116,365	52,783
1-7/8"	45	5-5/8"	135	85.09	126.63	156,460	70,970	132,991	60,325
2"	48	6"	144	91.25	135.80	167,630	76,037	142,486	64,631
2-1/8"	52	6-1/2"	156	109.42	162.84	201,160	91,246	170,986	77,559
2-1/4"	56	7"	168	123.12	183.23	226,300	102,650	192,355	87,252
2-3/8"	57	7-1/8"	171	136.91	203.75	251,450	114,058	213,733	96,949
2-1/2"	60	7-1/2"	180	152.08	226.33	279,380	126,727	237,473	107,718
2-5/8"	64	8"	192	167.24	248.89	307,320	139,400	261,222	118,490
2-3/4"	68	8-1/2"	204	182.49	271.58	335,260	152,074	284,971	129,263
2-7/8"	69	8-5/8"	207	197.74	294.28	363,200	164,748	308,720	140,035
3"	72	9"	216	216.68	322.46	398,120	180,587	338,402	153,499

STATIC ROPE

Product Code: 360



**Kermantle
Polyester Outside
Nylon Inside**

A firm body flexible kernmantle construction designed to meet the demands of rescue, rappelling, and specialty rigging operations. It is a balanced non-rotational rope with a high tenacity solution dyed braided polyester cover over a heat stabilized nylon core. Static rope is designed to equal or exceed the 1983 NFPA standard for one and two-person rescue ropes.

CHARACTERISTICS

- Excellent wear resistance
- Good shock mitigation
- Maintains firm round shape when working

- High strength to weight ratio

APPLICATIONS

- Rescue Lines
- Rappelling Lines
- Specialty Rigging Lines

Fiber Content: Polyester and Nylon Fiber
Specific Gravity: 1.24
Water Absorption Fiber: 3% to 5%

STATIC				WEIGHT		AVERAGE STRENGTH	
SIZE							
Dia. Inch	Dia. mm	Circ. Inch	Circ. mm	Lbs per 100 Ft.	Kg per 100 M	Lbs	Kg
3/8"	9	1-1/8"	27	4.5	6.7	5,700	2,586
7/16"	11	1-1/4"	33	6.5	9.7	7,800	3,538
1/2"	12	1-1/2"	36	8.2	12.2	10,000	4,536
5/8"	16	2"	48	12.0	17.9	13,500	6,124

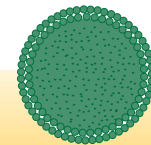
Elastic Elongation at Percentage of Break Strength:

Load	3/8"	7/16"	1/2"	5/8"
200 lbs.	1.7%	1.2%	.8%	.5%
450 lbs.	3.5%	3.0%	2.2%	1.3%
900 lbs.	5.9%	5.1%	4.1%	3.0%

SPECIALTY ROPES

DURAVET™

Product Code: 292



**Parallel Core
Polyester Fiber**

An extremely firm and stiff rope construction produced with high tenacity polyester fiber. Duravet™ has a parallel core of filament polyester with a tightly braided polyester cover which makes it suitable for crimped sleeve connectors. This high strength and low stretch product is primarily used in

concrete soil erosion mats. **The stated strengths are rope strengths and do not reflect termination efficiency.** The wear resistance, firm construction, mechanical termination capability, light weight and non-corrosion make it an alternative to wire rope.

CHARACTERISTICS

- High strength to weight ratio
- Diameter tolerance \pm 2%
- Low stretch

- Non-corrosive

APPLICATIONS

- Soil Erosion Mats
- Oil Boom Containment Rope
- Terrestrial Anchoring Lines

DURAVET						
	mm (Circ.)	Inches (Dia.)				
292-240	19	1/4"	0.240	2.20	3,100	1,000
292-250	20	1/4"	0.255	2.70	3,700	7,000
292-280	22	1/4"	0.280	3.00	4,500	6,000
292-290	24	1/4"	0.295	3.30	5,100	5,000
292-310	27	5/16"	0.310	4.40	7,000	4,000
292-380	30	3/8"	0.380	5.50	10,000	3,000
292-500	40	1/2"	0.500	9.70	15,000	2,000

Fiber Content: Polyester Fiber
Specific Gravity: 1.38
Water Absorption Fiber: 3% to 5%

Elastic Elongation at Percentage of Break Strength:

10%	20%	30%
0.6	1.4	2.2

COMPARISON CHARTS AVERAGE STRENGTHS IN POUNDS

12-STRAND ROPES						DOUBLE BRAID ROPES						
Dia.	RP-12 Ultra-Blue	RP-12 SSR-1200	RP-12 Polyester	RP-12 Nylon	AmSteel	AmSteel-Blue	2-In-1 Super Strong	2-In-1 Stable Braid	Spectron II	Ultra-Tech	Dia.	
7/64"	-	-	-	-	1,200	-	-	-	-	-	7/64"	
1/8"	-	-	-	-	1,800	-	-	-	-	-	1/8"	
3/16"	-	-	-	-	3,800	-	-	-	-	2,300	3/16"	
1/4"	-	-	-	-	6,600	9,200	2,300	2,800	4,500	4,800	1/4"	
5/16"	-	-	-	-	9,800	13,700	3,400	4,200	7,500	7,800	5/16"	
3/8"	-	-	-	-	14,100	20,445	4,900	5,600	9,800	10,500	3/8"	
7/16"	-	-	-	-	16,500	23,925	6,600	7,700	11,700	14,800	7/16"	
1/2"	-	-	-	-	25,000	36,250	8,500	10,400	15,500	22,000	1/2"	
9/16"	-	-	-	-	30,800	44,660	-	13,300	22,000	-	9/16"	
5/8"	-	-	-	-	40,700	59,015	15,200	16,300	27,000	42,000	5/8"	
3/4"	13,500	16,000	17,400	18,400	48,000	69,600	19,100	20,400	35,000	SPECIALTY ROPES		
13/16"	-	-	-	-	56,500	81,925	-	-	40,000	Mooring Master		
7/8"	20,000	24,000	26,200	27,600	67,800	98,310	28,300	29,900	50,000	D-7	P-7	Dia.
1"	25,000	28,000	30,500	32,200	80,000	116,000	33,600	39,200	57,000	112,600	-	1"
1-1/16"	-	-	-	-	90,000	131,300	-	-	59,300	-	-	1-1/16"
1-1/8"	27,000	36,000	39,200	41,400	102,000	147,900	45,000	48,200	72,900	140,800	-	1-1/8"
1-1/4"	38,000	42,000	45,800	48,300	114,000	165,300	52,000	57,300	81,000	169,000	-	1-1/4"
1-5/16"	43,000	48,000	52,300	55,200	127,000	184,150	59,000	64,700	-	-	-	1-5/16"
1-1/2"	47,000	60,000	65,400	69,000	157,000	227,650	74,000	75,100	-	225,300	100,580	1-1/2"
1-5/8"	61,000	72,000	78,500	82,800	186,000	283,185	91,000	87,200	-	253,400	117,340	1-5/8"
1-3/4"	73,000	84,000	91,600	96,600	220,000	334,950	-	-	-	295,600	136,900	1-3/4"
1-7/8"	-	-	-	-	-	-	-	-	-	344,900	156,460	1-7/8"
2"	85,000	102,000	111,000	117,000	250,000	380,625	131,000	124,000	-	394,200	167,630	2"
2-1/8"	95,000	120,000	131,000	138,000	300,000	456,750	-	-	-	443,500	201,160	2-1/8"
2-1/4"	110,000	139,000	151,000	166,000	353,000	537,443	177,000	166,000	-	506,800	226,300	2-1/4"
2-3/8"	-	-	-	-	-	-	-	-	-	563,100	251,450	2-3/8"
2-1/2"	130,000	163,000	177,000	186,000	400,000	588,000	-	-	-	619,500	279,380	2-1/2"
2-5/8"	145,000	175,000	196,000	207,000	450,000	661,500	230,000	212,000	-	675,800	307,320	2-5/8"
2-3/4"	157,000	204,000	222,000	235,000	500,000	735,000	-	-	-	739,100	335,260	2-3/4"
2-7/8"	-	-	-	-	-	-	-	-	-	802,500	363,200	2-7/8"
3"	180,000	230,000	255,000	269,000	565,000	830,550	285,000	278,000	-	886,900	398,120	3"
3-1/4"	227,000	280,000	309,000	315,000	685,000	1,006,950	322,000	343,000	-	-	-	3-1/4"
3-5/8"	265,000	340,000	375,000	372,000	850,000	-	384,000	407,000	-	-	-	3-5/8"
4"	315,000	410,000	450,000	449,000	1,000,000	-	451,000	470,000	-	-	-	4"
4-1/4"	-	-	-	-	1,150,000	-	523,000	533,000	-	-	-	4-1/4"
4-5/8"	-	-	-	-	1,300,000	-	599,000	616,000	-	-	-	4-5/8"
5"	-	-	-	-	-	-	680,000	698,000	-	-	-	5"

12-STRAND ROPES						SPECIALTY ROPES	
Diameter	Quik-Splice Polytron	Dura-Plex	PTS-12	Tenex	Tech 12	Static Rope	Diameter
3/16"	-	-	-	-	5,600	-	3/16"
1/4"	1,600	1,940	1,750	3,240	8,150	-	1/4"
5/16"	2,500	2,600	3,000	4,720	13,000	-	5/16"
3/8"	3,600	3,880	4,500	6,170	18,000	5,700	3/8"
7/16"	4,600	5,200	5,900	9,000	28,000	7,800	7/16"
1/2"	6,650	6,700	8,750	11,800	33,000	10,000	1/2"
9/16"	-	-	11,250	15,000	-	-	9/16"
5/8"	10,900	11,600	14,000	17,100	50,000	13,500	5/8"
3/4"	-	14,500	16,000	22,400	65,000	-	3/4"
13/16"	-	-	21,000	-	-	-	13/16"
7/8"	-	21,200	-	32,600	84,000	-	7/8"
1"	-	25,000	-	42,700	102,000	-	1"

STANDARDS FOR STRENGTH & USAGE

NEW ROPE TENSILE STRENGTHS

New rope tensile strengths are based on tests of new and unused rope of standard construction in accordance with manufacturer's Standard Test Methods. It can be expected that strengths will decrease as soon as a rope is put into use. Because of the wide range of rope use, changes in rope conditions, exposure to the many factors affecting rope behavior, and the possibility of risk to life and property, it is impossible to cover all aspects of rope applications or to make blanket recommendations as to working loads.

WORKING LOADS

Working loads are for rope in good condition with appropriate splices, in noncritical applications and under normal service conditions. Working loads are based on a percentage of the approximate breaking strength of new and unused rope of current manufacture. Normal working loads do not cover dynamic conditions such as shock loads or sustained loads, nor do they cover where life, limb or valuable property are involved. In these cases a lower working load must be used.

A higher working load may be selected only with expert knowledge of conditions and professional estimates of risk, if the rope has been inspected and found to be in good condition, and if the rope has not been subject to dynamic loading (such as sudden drops, snubs or pick-ups), excessive use, elevated temperatures, or extended periods under load.

NORMAL WORKING LOADS

Normal working loads are not applicable when rope has been subject to dynamic loading. Whenever a load is picked up, stopped, moved or swung there is an increased force due to dynamic loading. The more rapidly or suddenly such actions occur, the greater the increase will be. In extreme cases, the force put on the rope may be two, three, or even more times the normal load involved. Examples could be ropes used as a tow line, picking up a load on a slack line, or using rope to stop a falling object. Dynamic effects are greater on a low elongation rope such as polyester than on a high elongation rope such as nylon, and greater on a short rope than on a long one. Therefore, in all such applications normal working loads as given do not apply.

DYNAMIC LOADING

For dynamic loading applications involving severe exposure conditions, or for recommendations on special applications, consult the manufacturer.

ANGER TO PERSONNEL

Persons should be warned against the serious danger of standing in line with a rope under tension. Should the rope part, it may recoil with considerable force. In all cases where any such risks are present, or if there is any question about the loads involved or the condition of use, the working load should be substantially reduced and the rope properly inspected before every use.

WINCHING LINES

Braided rope can develop a twist when constantly used on a winch. This makes handling more difficult and the rope should be relaxed and rotated in the opposite direction to remove a twist. To avoid this condition the direction of turns over the winch should be alternated regularly.

SPLICING AND KNOTS

Splices should be used instead of knots whenever possible because knots can decrease rope strength up to 50%. When splices are used, always use the manufacturer's recommended splicing procedures. When knots are used, be sure to take into consideration the knot's corresponding reduction to the rope strength and adjust your working load accordingly. **For more information please see the Knots section on page 37.**

ROPE INSPECTION:

Avoid using rope that shows signs of aging and wear. If in doubt, destroy the used rope.

No type of visual inspection can be guaranteed to accurately and precisely determine the actual residual strength. When the fibers show wear in any given area, the rope should be re-spliced, downgraded, or replaced. Check the line regularly for frayed strands and broken yarns. Pulled strands should be re-threaded into the rope if possible. A pulled strand can snag on a foreign object during rope operation.

Both outer and inner rope fibers contribute to the strength of the rope. When either is worn, the rope is naturally weakened. Open the strands of the rope and look for powdered fiber, which is one sign of internal wear.

A heavily used rope will often become compacted or hard which indicates reduced strength. The rope should be discarded if this condition exists.

AVOID ALL ABRASIVE CONDITIONS

All rope will be severely damaged if subjected to rough surfaces or sharp edges. Chocks, bits, winches, drums and other surfaces must be kept in good condition and free of burrs and rust. Pulleys must be free to rotate and should be of proper size to avoid excessive wear.

AVOID CHEMICAL EXPOSURE

Rope is subject to damage by chemicals. Consult the manufacturer for specific chemical exposure, such as solvents, acids, and alkalis. Consult the manufacturer for recommendations when a rope will be used where chemical exposure (either fumes or actual contact) can occur.

AVOID OVERHEATING

Heat can seriously affect the strength of synthetic ropes. The temperatures at which 50% strength loss can occur are: Polypropylene 250° F, Nylon 350° F, Polyester 350° F. When using rope where the temperature exceeds these levels (or if it is too hot to hold), consult the manufacturer for recommendations as to the size and type of rope for the proposed continuous heat exposure conditions. When using ropes on a capstan or winch, care should be exercised to avoid surging while the capstan or winch head is rotating. The friction from this slippage causes localized overheating which can melt or fuse synthetic fibers, resulting in severe loss of tensile strength.

STORAGE

All rope should be stored clean, dry, out of direct sunlight, and away from extreme heat. It should be kept off the floor on racks to provide ventilation underneath. Never store on a concrete or dirt floor, and under no circumstances should cordage and acid or alkalis be kept in the same vicinity. Some synthetic rope (in particular polypropylene or polyethylene) may be severely weakened by prolonged exposure to ultraviolet (UV) rays unless specifically stabilized and/or pigmented to increase UV resistance. UV degradation is indicated by discoloration and the presence of splinters and slivers on the surface of the rope.

ROPE INSPECTION & RETIREMENT

The use of rope for any purpose subjects it to friction, bending and tension. All rope hardware, sheaves, rollers, capstans, cleats, as well as knots are, in varying degrees, damaging to the rope. It is important to understand that rope is a moving, working, strength member and even under the most ideal conditions will lose strength during use in any application. Maximizing the safety of rope performance is directly related to how strength loss is managed and making sure ropes are retired from service before they can create a dangerous situation. Ropes are serious working tools and used properly will give consistent and reliable service. The cost of replacing a rope is extremely small when compared to the physical damage or personnel injury a worn out rope can cause.

ROPE LIFE FACTORS:

There are basically three steps to consider in providing the longest possible service life, the safest conditions and long range economy for ropes: Selection, Usage, and Retirement.

1. SELECTION

Select the right rope for the job in the first place.

Selecting a rope involves evaluating a combination of factors. Some of these factors are straight forward like comparing rope specifications. Others are less qualitative like a preference for a specific color or how a rope feels in your hand. Cutting corners, reducing application factors, sizes or strengths on an initial purchase creates unnecessary replacements, potentially dangerous conditions and increases long term costs. Fiber and construction being equal, a larger rope will out-last a smaller rope because of the greater surface wear distribution. By the same token, a stronger rope will out-last a weaker one because it will be used at a lower percentage of its break strength with less chance of over stressing.

STRENGTH: When given a choice between ropes, select the strongest of any given size. A load of 200 pounds represents 2% of the strength of a rope with a breaking strength of 10,000 pounds. The same load represents 4% of the strength of a rope that has a breaking strength of 5,000 pounds. The weaker rope is having to work harder and as a result will have to be retired sooner.

ELONGATION: It is well accepted that ropes with lower elongation under load will give you better load control, a big help at complicated job sites. However, a rope with lower elongation that is shock loaded can fail without warning even though it appears to be in good shape. Low elongating ropes should be selected with the highest possible strength. Twisted rope has lower strength and more stretch. Braided rope has higher strength and lower stretch.

FIRMNESS: Select ropes that are firm and round and hold their shape during use. Soft or mushy ropes will snag easily and abrade quickly causing accelerated strength loss. A loose or mushy rope will almost always have higher break strengths than a similar rope that is firm and holds its shape because the fibers are in a straighter line which improves strength but compromises durability.

REPUTATION: Consider the opinion of industry associates who may have more experience as to how well a rope performs. Consider also the reputation of the rope manufacturer. Are they involved with and supportive of the industries where their products are used? Do they stand behind their products with consistent quality and reliable service? Buying unproven ropes because they are a little less expensive is false economy and can lead to disaster.

2. USAGE:

Use rope properly; do not abuse or shock load it, observe recommended usage factors for bending and work loads. Keep ropes clean and eliminate abrasion whenever possible.

WORKING LOADS: Working loads are the loads that a rope is subjected to in everyday activity. They are normally expressed as a percentage of new rope strength and should not exceed 20%. A point to remember is that a rope may be severely overloaded or shock loaded in use without breaking. However, damage and strength loss may have occurred without any visible indication. The next time the rope is used under normal working loads the acquired weakness can cause it to break. Do not blame the rope, it was simply overloaded and failed from what is known as fatigue.

RECOMMENDED WORK LOAD LIMIT:

CATALOGED ROPES	
Construction Type	Working Load % Average Break Strength
3-Strand	20%
8-Strand Plait	20%
12-Strand Braid	20%
Double Braid	20%

BENDING: Any sharp bend in a rope under load decreases its strength substantially and may cause premature damage and failure. Sheave diameters on rotating sheave blocks should be 10 times the rope diameter for twisted ropes and 8 times the rope diameter for braided ropes. The diameter on fixed pin terminations should be at least 3 times the rope diameter (i.e., the bending radius for 1/2" ropes should be 1-1/2").

KNOTS: While it is true that a knot reduces rope strength, it is also true that a knot is a convenient way to accomplish rope attachment. The strength loss is a result of the tight bends that occur in the knot. With some knots, ropes can lose up to 50% of their strength. It is vital that the reduction in strength by the use of knots be taken into account when determining size and strength of a rope to be used in an application. To avoid knot strength reduction, it is recommended that a rope be spliced according to manufacturers instructions. Splice terminations are used in all our ropes to determine new and unused tensile strengths. Therefore, whenever possible, spliced terminations should be used to maximize the rope strength for new and used ropes.

ROPE STORAGE: Keep your ropes as clean and dry as possible and store them in a coil away from heat sources.

SHOCK LOADS: Shock loads are simply a sudden change in tension from a state of relaxation or low load to one of high load. Any sudden load that exceeds the work load by more than 10% is considered a shock load. The further an object falls, the greater the impact. Synthetic fibers have a memory and retain the effects of being overloaded or shock loaded and can fail at a later time even though loaded within the work load range.

ROPE INSPECTION & RETIREMENT

3. RETIREMENT:

Retire rope from use when it has reached its discard point.

One of the most frequently asked questions is “When should I retire my rope?” The most obvious answer is before it breaks. But, without a thorough understanding of how to inspect it and knowing the load history, you are left making an educated guess. Unfortunately, there are no definitive rules nor industry guidelines to establish when a rope should be retired because there are so many variables that affect rope strength. Factors like load history, bending radius, abrasion, chemical exposure or some combination of those factors, make retirement decisions difficult. Inspecting your rope should be a continuous process of observation before, during and after each use. In synthetic fiber ropes the amount of strength loss due to abrasion and/or flexing is directly related to the amount of broken fiber in the rope’s cross section. After each use, look and feel along every inch of the rope length inspecting for damage as listed below.

ABRASION: When the rope is first put into service the outer filaments of the rope will quickly fuzz up. This is the result of these filaments breaking and this roughened surface actually forms a protective cushion and shield for the fibers underneath. This condition should stabilize, not progress. If the surface roughness increases, excessive abrasion is taking place and strength is being lost. As a general rule for braided ropes, when there is 25% or more wear from abrasion the rope should be retired from service. In other words, if 25% or more of the fiber is broken or worn away the rope should be removed from service. With three-strand ropes, 10% or more wear is accepted as the retirement point.

Look closely at both the inner and outer fibers. When either is worn the rope is obviously weakened. Open the strands and look for powdered fiber which is one sign of internal wear. Estimate the internal wear to estimate total fiber abrasion. If total fiber loss is 20%, then it is safe to assume that the rope has lost 20% of its strength as a result of abrasion.

GLOSSY OR GLAZED AREAS: Glossy or glazed areas are signs of heat damage with more strength loss than the amount of melted fiber indicates. Fibers adjacent to the melted areas are probably damaged from excessive heat even though they appear normal. It is reasonable to assume that the melted fiber has damaged an equal amount of adjacent unmelted fiber.

INCONSISTENT DIAMETER: Inspect for flat areas, bumps or lumps. This can indicate core or internal damage from overloading or shock loads and is usually sufficient reason to replace the rope.

DISCOLORATION: With use, all ropes get dirty. Be on the lookout for areas of discoloration which could be caused by chemical contamination. Determine the cause of the discoloration and replace the rope if it is brittle or stiff.

INCONSISTENCY IN TEXTURE AND STIFFNESS: Can indicate excessive dirt or grit embedded in the rope or shock load damage and is usually reason to replace the rope.

TEMPERATURE: When using rope, friction can be your best friend or worst enemy if it is not managed properly. By definition, friction creates heat, the greater the friction, the greater the heat buildup. Heat is an enemy to synthetic fiber and elevated temperatures can drastically reduce the strength and/or cause rope melt-through.

The critical and melting temperatures for synthetic fibers are listed below:

TEMPERATURES	Critical	Melting
Polypropylene	150° F	330° F
HMWPE	150° F	297° F
Technora	450° F	900° F*
Kevlar	400° F	800° F*
Nylon	350° F	460° F
Polyester	350° F	480° F
Manila	180° F	350° F*
*Charring point		

High temperatures can be achieved when surging rope on a capstan, checking ropes on a cable, running over stuck or non-rolling sheaves or rollers. Each rope’s construction and fiber type will yield a different coefficient of friction (reluctance to slip) in a new and used state. It is important to understand the operational demands and insure the size, rope construction and fiber type be taken into account to minimize heat buildup.

Never let ropes under tension scrub together or move relative to one another. Enough heat to melt the fibers can buildup and cause the rope to fail as quickly as if it had been cut with a knife.

Always be aware of areas of heat buildup and take steps to minimize it; under no circumstances let any rope come in contact with an exhaust muffler or any other hot object.

The strength of a used rope can be determined by testing but the rope is destroyed in the process so the ability to determine the retirement point before it fails in service is essential. That ability is based on a combination of education in rope use and construction along with good judgment and experience. Remember, you almost always get what you pay for in the form of performance and reliability.

ROPE INSPECTION CHECK LIST

Condition	Discard Point	Condition	Discard Point
1. Original rope bulk reduced by abrasion:		3. Diameter inconsistency:	
• Double braid* cover by 50%	✓	• Localized diameter reduction	✓
• Twelve-strand braid by 25%	✓	• Flat areas	✓
• Eight-strand plait by 25%	✓	• Lumps and bumps in rope	✓
• Three-strand by 10%	✓	4. Glossy or glazed fiber:	
2. Fiber strands cut:		• Localized or extended areas	✓
• Double braid* by three or more adjacent strands cut	✓	5. Inconsistency of texture:	
• Twelve-strand braid by two or more adjacent strands cut	✓	• Localized or extended areas of stiffness	✓
• Eight-strand plait by one or more adjacent strands cut	✓	6. Discoloration:	
• Three-strand by one or more adjacent strands cut	✓	• Localized or extended areas	
<i>*Refers to double braids that have both core and cover strength members.</i>		• caused by chemical contamination	✓

ELONGATION & WINDING ROPE

In order to establish definitions involving stretch in ropes, it is necessary to review the terms utilized to define the basic components of stretch:



ELASTIC ELONGATION (E.E)

Refers to the portion of stretch or extension of a rope that is immediately recoverable after the load on the rope is released. This recoverable tendency is a primary result of the fiber (or fibers) used as opposed to the rope construction. Each type of synthetic fiber inherently displays a unique degree of elasticity. Relatively, HMWPE fiber has an extremely low elasticity compared to nylon fiber.

HYSTERESIS

Refers to a recoverable portion of stretch or extension over a period of time after a load is released. In measuring elastic recovery it is the recovery that occurs immediately when a load is removed. But thereafter, a remaining small percentage of elastic recovery will occur slowly and gradually over a period of hours or days. This retardation in recovery is

measured on a length/time scale and is known as hysteresis or recovery over time.

PERMANENT EXTENSION (P.E.) AFTER RELAXED

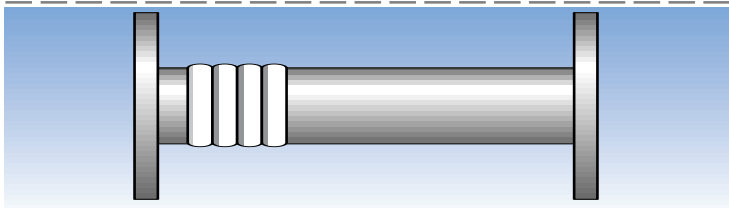
Refers to that portion of extension which, due to construction deformation (compacting of braid and helical changes) and some plastic deformation of the yarn fibers, prevents the rope returning to the original length.

PERMANENT EXTENSION (P.E.) WHILE WORKING

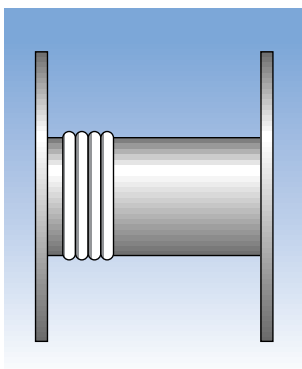
Is the amount of extension which exists when stress is removed but no time is given for hysteresis recovery. It includes the non-recoverable and hysteresis extension as one value and represents any increase in the length of a rope in a constant working situation such as during repeated surges in towing or other similar cyclical operations.

The percentage of P.E. over the working load range is generally in order of four or six percent for braided ropes and two to three times as much for plaited. However, it will vary slightly with different fibers and rope constructions. In some applications, such as sub-surface mooring or devices that demand precise depth location and measurement, allowances must be made for this factor.

CREEP (COLD FLOW) refers to fiber deformation (elongation) due to molecular slippage under a constant static loading situation. Fibers that have this inherent characteristic will display extremely lower or negligible creep if minor fluctuations occur in the rate and/or frequency of load levels. In rope form, this would apply to polypropylene, polyethylene and HMPWE fibers.



The first layer (wrap) around the winch drum should be put on closely and tightly. Initial winding tension (load) should be approximately fifty pounds. This will prevent subsequent wraps from slipping down between turns when tension is applied. The American Group Winch Lines tend to self level.



EFFECT OF ROPE DIAMETER ON DRUM CAPACITY	
Rope Diameter	Length on Drum
1-1/8"	100'
1"	125'
7/8"	165'
3/4"	225'
5/8"	325'
1/2"	510'

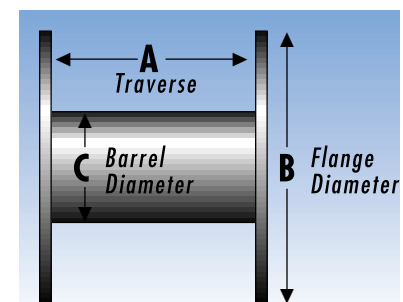
NOTE: A minimum of four wraps of rope should always be kept on the drum and never worked below the four wraps. An important exception is applied to Amsteel® and Amsteel® Blue where a minimum of eight wraps should always be kept on the drum.

DETERMINING LENGTH OF ROPE THAT CAN BE PUT ON A WINCH

The formula for rope capacity on a winch drum is:

$$\text{Length to be stored (feet)} = \frac{A(B^2 - C^2)}{15.3 (\text{rope dia.})^2}$$

A, B, C and rope diameter are expressed in inches; length (L) is expressed in feet.

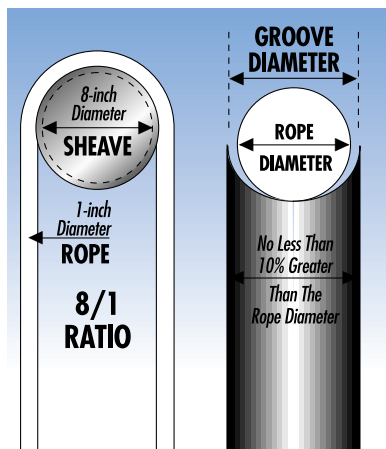


SHEAVE DIAMETER & BENDING RADIUS

SHEAVE DIAMETERS & SIZES

Sheave diameters should be:

- Twisted/Plaited = 10 times rope diameter
- Braided = 8 times rope diameter
Exception Kellar Braids = 20-24 times rope diameter



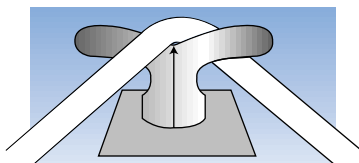
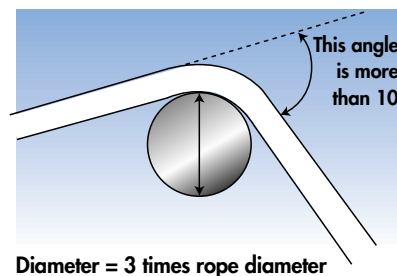
To assure maximum efficiency and safety, sheaves for braided ropes should be no less than eight times the rope diameter. The sheave groove diameter should be no less than ten percent greater than the rope diameter. The sheave groove should be round in shape. Sheaves with "V" shaped grooves should be avoided, as they tend to pinch and damage the rope through excessive friction and crushing of the rope fibers. Sheave surfaces should be kept smooth and free of burrs and gouges. Bearings should be maintained to ensure smooth rotation of sheaves.

BENDING RADIUS

Any sharp bend in a rope under load decreases its strength substantially and may cause premature damage or failure.

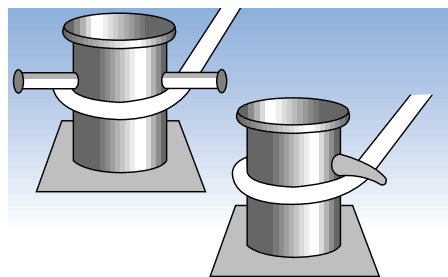
In sizing the radius of bits, fairleads and chocks for best performance the following guidelines are offered:

- Where a rope bends more than ten degrees around bits or chocks or, for that matter, is bending across any surface, the diameter of that surface should not be less than three times the diameter of the rope. Stated another way, the diameter of the surface should be at least three times the rope diameter. A four-to-one ratio (or larger) would be better yet because the durability of the rope increases substantially as the diameter of the surface over which it is worked increases.

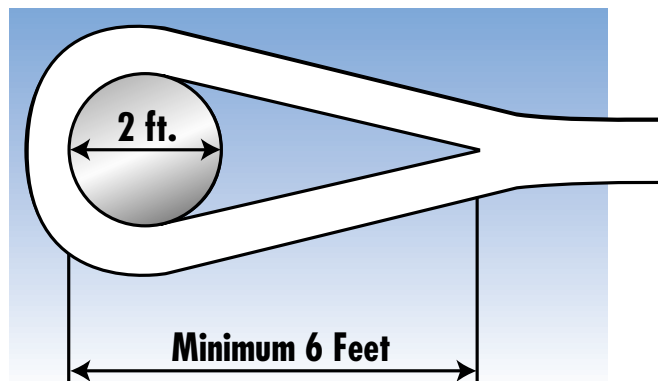


- On a cleat when the rope does not bend radially around the barrel of the cleat can be one half the rope circumference (minimum).

- Many tugboats using eight and nine-inch circumference headlines in ship-handling work have fair size bits (eighteen-inch diameter, etc.) which is an adequate bending radius. However, ironically, many of these bow and shoulder bits are equipped with "horns" of a relatively small diameter (five or six-inches) and it is these horns under or over which the lines pass and bend first in many cases. This results in shortened rope life and excessive rope replacement costs.



BOLLARD with undersized "horns"

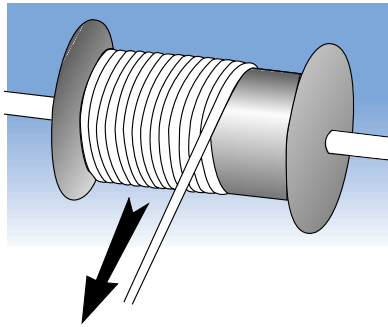


- The ratio of the length of an eye splice to the diameter of the object over which the eye is to be placed (bollard, bitt, cleat, etc.) should be a minimum three-to-one relationship and preferably five-to-one. In other words, if you have a bollard two feet in diameter the eye splice should be six or ten feet in length. By using this ratio the angle of the two legs of the eye splice at its throat will not be so severe as to cause a parting or tearing action at this point (thimbles are normally designed with a three-to-one ratio).

ROPE HANDLING

REMOVING ROPE FROM REEL OR COIL:

Synthetic fiber ropes are normally shipped on reels for maximum protection while in transit. The rope should be removed from the reel by pulling it off the top while the reel is free to rotate. This can be accomplished by passing a pipe through the center of the reel and jacking it up until the reel is free from the deck. Rope should never be taken from a reel lying on its side. If the rope is supplied on a coil, it should always be uncoiled from the inside so that the first turn comes off the bottom in a counter-clockwise direction.



AVOID KINKING AND HOCKLING:

The continuous use of a line on one side of a winch or windlass is a common abuse which can render a line useless in a comparatively short time. Repeated hauling of a line over a winch in a counterclockwise direction will extend the lay of the rope and simultaneously shorten the twist of each strand. As this action continues, kinks (or hockles) will develop. Once these hockles appear, they cannot be removed and the rope is permanently damaged at the point of hocking.



If, on the other hand, the line is continuously hauled over a winch in a clockwise direction, the rope lay is shortened and the rope becomes stiff and will kink readily.

To avoid detrimental conditions, the direction of turns over the winch should be alternated regularly. Clockwise turns are recommended for the initial use of a new line. If this practice is observed, the original rope balance will be maintained and the lines will have a much longer useful life.

This condition also arises in the deep-sea mooring of free-rotating buoys where a three-strand rope will rotate until it spins and twists itself into hockles and eventually destroys itself. The use of swivels with three-strand ocean-towing hawsers, or transmission stringing lines, may also cause damaging hockles. The sudden release of a heavy strain may also cause hockles or hard kinks.

Excessive turns can cause kinking in any rope but hockles can occur only in the basic "twisted" ropes (three-strand, four-strand and cable-laid).

Braided and plaited ropes cannot be hockled; their inter-locking strand construction prevents the unlaying. Strands run in both directions creating a torque-free balance thus eliminating any inherent tendency toward twist or rotation. Swivels can be used safely but are seldom necessary. One word of caution here: when marrying a braided line to a twisted line (and also to wire rope) the twisted line can impart its twist to the braided line if the ropes are married without a swivel in between.

A braided or plaited rope, being torque-free, can have twist induced by constant working on winches and capstans. If a twist develops, it can easily be removed by "counter-rotating" when the rope is relaxed.

COILING AND FAKING:

Three-strand ropes should be coiled in a clockwise direction (or in the direction of the lay of the rope) and uncoiled in a counterclockwise direction to avoid kinks. An alternate and perhaps better method is to fake out the line figure-eight fashion. This avoids putting twist in the line in either direction and lessens the risk of kinking.

FIGURE "8"

Great care must be taken in the stowage and proper coiling of three-strand ropes to prevent the natural built-in twist of the line from developing kinks and damaging hockles.



Braided ropes on the other hand have no built-in twist and are far more resistant to kinking. Even if kinks do develop they cannot develop further into hockles.

The best method for making up braided rope for deck stowage is in figure-eight fashion either faked flat on the deck or figure-eight vertically around bulkhead cleats. It should not be hand coiled in either direction as this merely puts turn into the line which may develop into kinks when paying-out. Remember that there is no turn or twist in the line to begin with so do not produce it by coiling.



Three-Strand rope faked down on deck

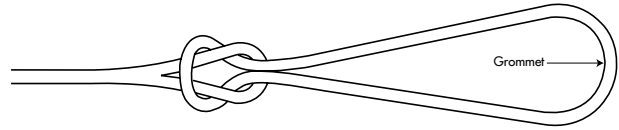
KNOTS

Rigging is complicated and demands experience as well as an understanding of the effects on the rope of the various knots used. It is widely known that knots can significantly reduce rope strength with a corresponding reduction in the work load limit recommended by a manufacturer.



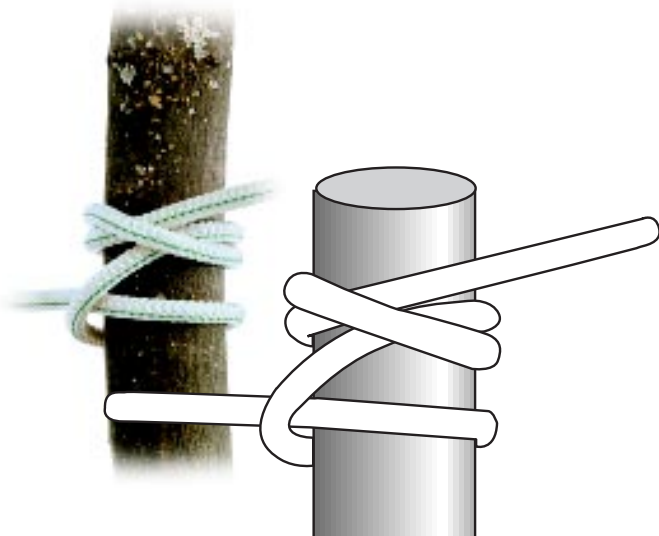
BOWLINE

The bowline will not slip or jam and is easily untied. The bowline creates about 40% rope strength reduction.



COW HITCH

The Cow Hitch provides a suitable method of joining two ropes of similar diameter without the use of thimbles or other hardware. The Cow Hitch yields approximately 85% efficiency.



CLOVE HITCH WITH HALF HITCH

The clove hitch is easy to tie and untie. The clove hitch creates approximately 40% rope strength reduction.



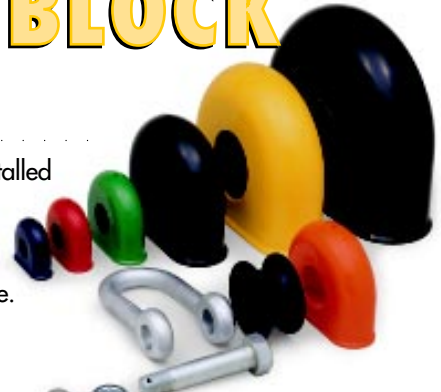
SHEET BEND

The sheet bend is used instead of a square knot to tie two lines of different diameter together. Be sure to slide the smaller line down onto the loop. The sheet bend creates approximately 50% rope strength reduction.

NYLITE SPOOL, SHIELD, SHACKLE & SNATCH BLOCK

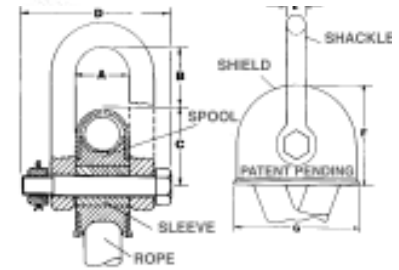
NYLITE SPOOL, SHIELD AND SHACKLE

Unlike conventional thimbles the Nylite™ Connector Assembly is easily installed into or removed from a pre-made soft eye. Only one-seventh the weight of metal thimbles, Nylite™ connectors will not deform or rupture from repeated loadings. The Nylite™ Shackle was designed to take full advantage of the high strength of the Nylite™ connector and synthetic rope.



- * Working Load in tons (2,000 lbs.)
- * Working loads, as given, are based on pin/bore relationship provided by use of Nylite™ Shackle. When using a non-standard pin, the Working Load as given DOES NOT APPLY.
- * When using with Spectron II™ up-size one size
- * When using with Amsteel® up-size two sizes

SIZE	COLOR OF SHIELD	WORKING LOAD*	MINIMUM EYE SIZE
1	Blue	1-1/8 Tons	2-3/16"
2	Red	1-5/8 Tons	2-3/4"
3	Green	2-1/2 Tons	3-3/4"
4	Orange	4-1/2 Tons	4-7/8"
5	Black	7-1/2 Tons	6-1/8"
6	Yellow	12-1/2 Tons	7-5/8"
7	Black	20 Tons	9-3/4"
8	Black	25 Tons	11-1/4"
9	Black	35 Tons	14"



NYLITE SPOOL, SHIELD, & SHACKLE

Measurements listed in inches.

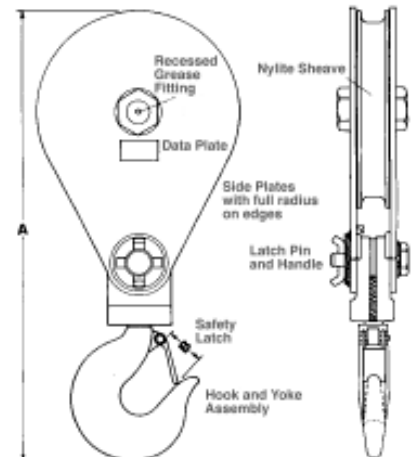
SIZE	ROPE SIZE RANGE		SPOOL/SLEEVE		PIN* DIA.	A	B	C	D	E	F	G
	DIA.	CIRC.	I.D.	O.D.								
1	3/8 - 1/2	1-1/8 - 1-1/2	.46	NA	.44	.88	1.08	1.11	2.41	.38	1.99	2.34
2	9/16 - 5/8	1-3/4 - 2	.58	NA	.56	1.13	1.21	1.38	3.11	.50	2.38	2.88
3	3/4 - 13/16	2-1/4 - 2-1/2	.64	NA	.63	1.38	1.61	1.77	3.54	.56	3.02	3.70
4	7/8 - 1-1/16	2-3/4 - 3-1/4	.89	NA	.88	1.75	1.9	2.29	4.70	.75	3.79	4.71
5	1-1/8 - 1-5/16	3-1/2 - 4	1.02	NA	1.00	2.13	2.15	2.85	5.55	.88	4.85	5.95
6	1-1/2 - 1-3/4	4-1/2 - 5-1/2	1.54	NA	1.50	2.63	3.14	3.8	8.25	1.37	6.30	7.85
7	2 - 2-1/4	6 - 7	1.75	3.00	1.38	3.25	3.75	4.80	8.90	1.50	7.93	9.89
8	2-1/2 - 2-5/8	7-1/2 - 8	2.00	3.25	1.50	3.75	4.13	5.61	10.00	1.75	9.24	11.47
9	2-3/4 - 3-1/4	8-1/2 - 10	2.25	3.50	1.75	4.63	5.06	6.95	12.15	2.00	11.45	14.28

* Sizes 1 through 5 are supplied with jam nuts and cotter pins. Larger sizes have cotter pins and standard nuts.

SNATCH BLOCK



The Nylite™ Snatch Block maximizes a two part lifting system without over stressing synthetic rope. Exclusive high strength sheave reduces weight while providing the proper radius and groove shape to eliminate rope wear. Swivel plate with locking bolt makes change over easy and fast. Hook swivels under no or low load conditions.



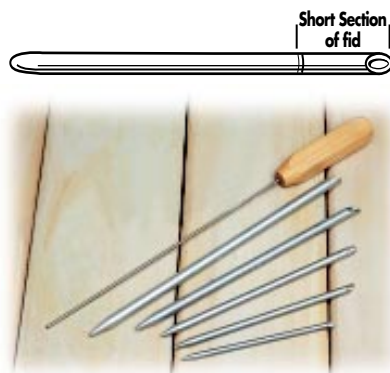
- Part. No. 915-321
- Rope Size (Dia.) 7/8" - 1-1/8"
- Working Load 8-Tons
- Block Weight 33 lbs.
- Over All Length (A) 23.0"
- Hook Opening (B) w/latch 1.5"

SP LICING, FABRICATING AND ASSEMBLY

ALUMINUM TUBULAR FIDS

Requirements for cut lengths, splicing and fabrication can best be met by contacting authorized American Group Distributors. Requirements for design, engineering and production of large and/or complex rope systems should be directed to:

Specialty Products Manager,
THE AMERICAN GROUP
2090 Thornton Street
Ferndale, WA 98248



ALUMINUM TUBULAR FIDS

A different sized Splicing Fid is required for each size of rope. When ordering be sure to specify the proper sized fid (See chart)

ALUMINUM TUBULAR FIDS			
PRODUCT CODE	FID SIZE = ROPE DIA.	TOTAL FID LENGTH	SHORT FID SECTION
901	1/4"	5-1/2"	2-1/16"
901	5/16"	6-3/4"	2-1/2"
901	3/8"	7-3/4"	2-7/8"
901	7/16"	9-1/2"	3-9/16"
901	1/2"	11"	4-1/8"
901	9/16"	12-1/4"	3-5/8"
901	5/8"	14"	4-1/8"
901	3/4"	16"	4-3/4"
901	7/8"	19"	4-3/4"
901	1"	21"	5-1/4"

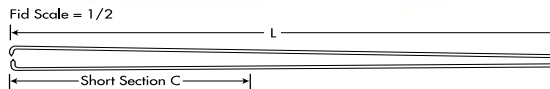
PUSHER		
PRODUCT CODE	ROPE SIZE	DIA.
913	Small	1/4" - 1/2"
914	Large	9/16" - 1"

SAMSON SPLICE TRAINING KIT & RED BOOK SP LICING MANUAL



Contains 2 Double Braided Ropes, 1 Fid, 1 Pusher, and Splicing Manual

For use with Samson 2-in-1 Double Braided Ropes and 12-Strand Braided Ropes. Eye • Back Splices



WIRE FIDS

For Rope 1-1/16" Diameter to 7" Diameter - Use Wire Fid

ROPE DIA.	ROPE CIRC.	WIRE DIA. T	TOTAL WIDTH W	FID LENGTH L	SHORT SECTION C	FID SCALE
1"	3"	3/16"	3/4"	10-1/2"	2-5/8"	1/2
1-1/8"	3-1/2"	3/16"	3/4"	12-1/4"	3"	1/2
1-1/4"	3-3/4"	3/16"	3/4"	13-1/4"	3-1/4"	1/2
1-5/16"	4"	3/16"	3/4"	14"	3-1/2"	1/2
1-1/2"	4-1/2"	3/16"	3/4"	16"	4"	1/2
1-5/8"	5"	3/16"	3/4"	17-12"	4-1/2"	1/2
1-3/4"	5-1/2"	1/4"	1-1/4"	19"	4-3/4"	1/2
2"	6"	1/4"	1-1/4"	21"	5-1/4"	1/2
2-1/8"	6-1/2"	1/4"	1-1/4"	23"	5-3/4"	1/2
2-1/4"	7"	1/2"	1-1/4"	25"	6"	1/2
2-1/2"	7-1/2"	1/4"	1-1/4"	26"	6-1/2"	1/2
2-5/8"	8"	1/2"	1-1/4"	28"	7"	1/2
2-7/8"	8-1/2"	1/4"	1-1/4"	30"	7-1/2"	1/2
3"	9"	5/16"	1-7/8"	32"	8"	1/2
3-1/4"	10"	5/16"	1-7/8"	35"	8-3/4"	1/2
3-1/2"	11"	5/16"	1-7/8"	39"	9-1/2"	1/2
4"	12"	5/16"	1-7/8"	42"	10-1/2"	1/2
4-1/4"	13"	5/16"	1-7/8"	46"	11-1/2"	1/2
4-5/8"	14"	3/8"	4-1/2"	33"	8-1/4"	1/3
5"	15"	3/8"	4-1/2"	35"	8-3/4"	1/3
5-1/4"	16"	3/8"	4-1/2"	37"	9-1/2"	1/3
5-1/2"	17"	3/8"	4-1/2"	40"	10"	1/3
6"	18"	3/8"	4-1/2"	42"	10-1/2"	1/3
6-1/4"	19"	3/8"	4-1/2"	44"	11"	1/3
6-1/2"	20"	3/8"	4-1/2"	47"	11-1/2"	1/3
7"	21"	3/8"	4-1/2"	49"	12-1/4"	1/3

Note: Wire fid sizes 3" circ. to 13" circ. are 1/2 scale; fids over 13" circ. are 1/3 scale. This is necessary in order to keep wire fids to a practical length.



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