



samson

THE STRONGEST NAME IN ROPE

SamsonRope.com

RECREATIONAL MARINE



The Samson Advantage

Where people and technology make the difference

Chances are you have seen Samson synthetic lines at work all around you. For more than 130 years, Samson has led the way in developing high-performance cordage products to meet the most demanding applications in the world. The running rigging you select for your boat carries the legacy of our experience in industries as diverse as commercial marine, safety and rescue, arborist, utilities, even the space program. So where's the advantage for you? When you buy Samson, you are getting a lot more than a rope. We call our all-inclusive package of technology, products, manufacturing excellence, service, and experience The Samson Advantage. Our customers call it peace of mind.

So whether you're looking for new sheets to trim your composite genoa or replacing the halyards on a traditional schooner, look for The Samson Advantage. It assures you of performance you can depend on, anytime, anyplace.

TECHNOLOGY

Staffed with dedicated scientists and application engineers, Samson's R&D department is dedicated to problem solving, and leads the industry in the development of lighter, stronger, more durable ropes. Samson pushes the forefront of scientific technologies to bring unmatched new product development to the market. Equally important to product innovation is our ability to stand confidently behind our products with accurate, reliable product specifications based on rigorous testing and measuring.

PRODUCTS

Samson products are considered state of the art by sailors around the world. Samson has pioneered the use of new synthetic fibers, unique constructions, and coatings to improve the service life of ropes, reduce weight, reduce snagging, enhance abrasion resistance, and make splicing easier.

MANUFACTURING

Samson's standards of manufacturing guarantee a quality product every time. Our manufacturing plants, in Lafayette, Louisiana and Ferndale, Washington are both ISO certified and utilize LEAN manufacturing principles. Our facilities operate the most modern equipment available and are strategically located to provide excellent service to major shipping ports.

SERVICE

World-class customer service is yours with every order. The first step to fulfilling this promise is our commitment to inventory. Because we understand that keeping your shelves stocked at the right level is critical, we make every effort to make sure product is ready to ship whenever you need it.

The next step to fulfilling our promise of world-class service is to make our people available to you. Our sales staff is at your disposal to help you select the products that are right for you and/or your customers, and we have application engineers on staff that will help you troubleshoot any technical issues specific to your application.

EXPERIENCE

When you sail with Samson, your boat carries the legacy of our more-than-130-years' experience providing rope to diverse industries. Known for our excellence and quality, we have the experience, integrity, and reliability you can get only from The Strongest Name in Rope.



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THE STRONGEST NAME IN ROPE

Choosing the Best Line for the Job

Assess your sailing, determine the loads, select the best rope for the job



So many different ropes — need a little help choosing?

Samson offers 20 different ropes specifically for use as running rigging. Each is engineered to perform superbly under a particular set of circumstances. The choice may seem intimidating. Armed with a little knowledge, an accurate assessment of your sailing needs, and what you expect from your lines, the choice becomes clear.

Accurately assess your working load

The selection guide on the next page can help identify potential ropes for several applications, but it all begins with an accurate assessment of the loads they'll encounter. Formulas for sheet loads are available in the back of this catalog, but consider the following:

Halyard loads are best determined by your rigger. For sheets, halyards, or control lines, anticipated loads are considered working loads. The standard working load for any Samson rope is 20% of the rated break strength.

For example, the total load for an end-of-boom mainsheet going through a four-purchase sheave system may be calculated at 900 lbs. Factoring in a 20% working load, the rope's break strength needs to be five times the working load, or 4,500 lbs. for this application.

Synthetic fibers: What are the differences?

Nylon was the first synthetic fiber widely used in ropes. Reasonably strong (much stronger than the natural fibers it replaced), nylon is still used in dock and anchor lines where its excellent elasticity allows it to absorb shock loads. But for many sailing applications, elasticity is not a desirable trait.

The introduction of polyester fiber allowed rope manufacturers to build ropes that were as strong as nylon, but with much less stretch and wet-strength loss. Because it has excellent grip, it works well on winches. Polyester ropes, particularly polyester double braids, became the standard against which all ropes were measured. Polyester is still regarded as an excellent fiber for many marine applications and is widely used for covers on high-performance, or high-modulus double braids.

High-modulus fibers: Which one, for what, and why?

There are several modern high-modulus fibers, each with a unique set of characteristics. The challenge of the rope designer is to match these characteristics with the unique performance requirements of the application for which they are designing.

Dyneema® is a high modulus polyethylene (HMPE) fiber with a particularly well balanced set of characteristics that allow it to be used in a variety of applications. Extremely lightweight (1/7th that of steel) with ultra-high strength (at least as strong as steel wire at the same size), very low stretch, and excellent abrasion, cut, and UV resistance, it is well-suited for use in halyards, control lines, and sheets.

Within the Dyneema® family of HMPE fibers are several grades, each possessing different characteristics that include increasing levels of tenacity, durability, and resistance to creep. Samson uses Dyneema® fiber or Dyneema®-fiber blends in more than half of the lines that comprise the competition-grade running rigging.

Other high-modulus fibers include Technora® an aramid fiber that blends very high strength, low stretch, and abrasion resistance with extreme heat resistance; Vectran® a liquid crystal polymer (LCP) fiber; and Zylon®, or PBO fiber, which offers the highest strength of all the high-modulus fibers; however, it must be protected from UV light. Technora®, Vectran®, and Zylon® are all exceptionally low-creep fibers.

In some cases, Samson blends fibers to take advantage of the relative properties of each of the components. Lightning Rope is a good example: the lightweight characteristic of Dyneema® fiber is blended with the strength and exceptionally low creep characteristics of Vectran® fiber. The result is a rope that is lighter than Validator-12, an all Vectran® 12-strand, while sacrificing only 5% of the strength of AmSteel®Blue, an all Dyneema®-fiber 12-strand line.

Class I and Class II ropes: What are they?

Samson ropes are classified into two main categories based on fiber type. Ropes manufactured using the traditional fibers of nylon, polyester, and olefin are categorized as Class I. Those ropes made in whole or in part with any of the high-modulus fibers such as Dyneema®, Technora®, or Vectran® are categorized as Class II.

Double braids and single braids: What's the difference?

Samson invented the double braid in the late 1950s, when nylon was still the king of synthetic fibers. This construction incorporates a braided core within a braided cover, each carrying an equal percentage of the total load. This type of construction is common to lines that use the more traditional synthetic fibers like polyester, olefin, and nylon. In addition to carrying up to one-half of the load, the cover serves to protect the core from abrasion or ultraviolet degradation, to provide grip on winches or in clutches and stoppers, and to provide protection from friction-generated heat.

For applications that require higher strength and lighter weight than traditional Class I fibers provide, you will look to a core-dependant double braid. In this construction, the core is made from Class II fibers and serves as the strength member while the cover is typically made of Class I fibers.

Guide to Running Rigging

Choosing the best line for the job

Single braids are ropes designed without a separate core. Samson manufactures a wide variety of single braids. For sailing applications, the most common single braid is a 12-strand line. Where necessary or desired, covers can be added to single braids to protect them from exposure to heat, abrasion, or cutting while in use. Samson manufactures Smooth Ice and Flavored Ice for this specific purpose. These are specialty covers where Dyneema®, Vectran®, Technora®, polyester, or Zylon® fibers are blended to provide enhanced heat and abrasion resistance.

Alternately, a sailor may opt to strip the cover from a double braid in order to save additional weight aloft for halyard applications. The cover remains intact in areas on the rope where the rope is cleated or winched.

Splicing techniques: Why is knowing the class of my line important?

Splicing techniques are different between Class I and Class II ropes and reflect the differences in strengths and grip between the two groups. It is absolutely critical to use the correct splice for the class of rope being used. The chart below and each of the product specification pages designate the class and recommended splicing technique.

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Product Locator

Use this chart along with the Line Selection Guide on the back cover and the data from the product pages to determine the right rope for your application. An accurate working load for each application is key to selecting the best line for the job.

PRODUCT	PAGE	HALYARDS	MAINSHEETS	SPINNAKER SHEETS	JIB/GENOA SHEETS	SPINNAKER GUYS	CONTROL LINES	REEF LINES	RUNNING BACKS	TRAPEZE LINES	LIGHT-AIR SHEETS	DINGHY CONTROL LINES	LIFELINES	DAVITS	CONSTRUCTION*	FIBER (Core/Cover)
AmSteel®	8	●					●	●	●	●			●	●	12-S	Dyneema® – Innegra™ S
AmSteel® Blue	7	●					●	●	●	●			●	●	12-S	Dyneema®
AS-78	6	●					●		●						12-S	Dyneema® SK78
AS-90	20	●	●	●	●		●		●						12-S	Dyneema® SK90
Control-DPX™	8		●	●	●	●	●								12-S	Dyneema® – Polyester Blend
Lightning Rope	12	●					●		●	●					12-S	Vectran® – Dyneema® Blend
LS and LST Yacht Braid	17		●	●	●		●	●							DB	Polyester / Polyester
MLX	9	●	●	●	●		●								DB	Dyneema® / Polyester
Tech-12	13	●					●		●						12-S	Technora®
Trophy Braid	17		●	●	●		●								DB	Polyester / Polyester
Validator-12	11	●							●					●	12-S	Vectran®
Validator II	11	●	●		●	●	●								DB	Vectran® / Polyester
Validator SKB	10	●	●	●	●	●	●								DB	Vectran® – Dyneema® Blend / Polyester
Ultra-Lite	15		●	●							●	●			DB	Dyneema® – MFP Blend / MFP
Ultra-Tech	12	●	●	●	●	●	●								DB	Technora® / Polyester
WarpSpeed®	6	●	●	●	●	●	●								DB	Dyneema® SK78 / Polyester
Xceed-78	21	●	●		●	●	●								DB	Dyneema® SK78 / Polyester
XLS	16	●	●	●	●	●	●	●				●		●	DB	Polyester / Polyester
XLS Extra / XLS Extra T	15	●	●	●	●	●	●	●				●			DB	Dyneema® – MFP Blend / Polyester

* DB = Double Braid, 12-S = 12-Strand Single Braid

● Class II (high-performance fiber content)

● Class I (traditional fiber content)

WarpSpeed®/WarpSpeed® White

WarpSpeed®: 444
WarpSpeed® White: 544

IMPROVED!

DOUBLE BRAID CONSTRUCTION

APPLICATIONS: Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Spinnaker Guys | Spinnaker Sheets

Class II



FEATURES:

- > High strength
- > Extremely low stretch
- > Lightweight
- > Excellent abrasion resistance

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema® SK78 / Polyester

WARPSPEED® COLORS:

Beige with black, blue, green, or red tracers and matching cores

WARPSPEED® WHITE COLORS:

White or white with blue, green, or red tracers and matching cores

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.2

A great strength-weight-stretch profile (high strength, low stretch, and very low weight) makes WarpSpeed® the high-performance racer's choice for double braid ropes. The strength member in this double braid is 100% Dyneema® SK78 fiber. The cover is a flexible 24-strand polyester that provides good handling, excellent performance in stoppers and clutches, and enhanced abrasion resistance. The cover can be stripped where desired for greater weight savings.

SPECIFICATIONS:

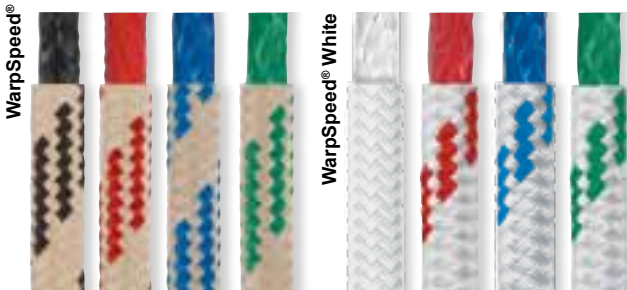
Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	5,100 lb	1.6 lb
5/16 in.	8 mm	6,200 lb	3.0 lb
3/8 in.	9 mm	9,800 lb	3.8 lb
7/16 in.	11 mm	14,000 lb	5.8 lb
1/2 in.	12 mm	21,000 lb	8.2 lb
9/16 in.	14 mm	26,500 lb	9.2 lb

ELASTIC ELONGATION:

10%	20%	30%
0.44%	0.62%	0.79%

After 50 cycles at % of break strength.

WITH Dyneema®



AS-78

Product Code: 814

IMPROVED!

12 STRAND CONSTRUCTION

APPLICATIONS: Control Lines | Halyards | Running Backs

Class II



FEATURES:

- > 30–40% lighter than aramid ropes of the same length
- > Very low creep

CONSTRUCTION:

12-strand single braid

FIBER:

Dyneema® SK78

SPLICE/CLASS:

12-Strand Class II

COLORS:

Black, gray, green, orange, red, white, or yellow

SPECIFIC GRAVITY: 0.98 (floats)

AS-78 incorporates high performance HMPE fiber, Dyneema® SK78, into a 12-strand single braid construction. Dyneema® SK78 fiber has one of the highest strength-to-weight ratios of all high-modulus fibers. Very high strength is matched with very low weight (it floats). Its extremely low elongation and outstanding creep performance are combined with HMPE's extremely good flex-fatigue performance and excellent abrasion resistance. Add a cover (Smooth Ice/Flavored Ice) where you need to cleat it or it runs through stoppers.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/8 in.	3 mm	2,500 lb	0.50 lb
5/32 in.	4 mm	4,000 lb	0.75 lb
3/16 in.	5 mm	5,400 lb	1.0 lb
1/4 in.	6 mm	8,600 lb	1.6 lb
5/16 in.	8 mm	13,700 lb	2.7 lb
3/8 in.	9 mm	19,600 lb	3.6 lb
7/16 in.	11 mm	23,900 lb	4.2 lb
1/2 in.	12 mm	34,000 lb	6.4 lb
9/16 in.	14 mm	40,500 lb	7.9 lb
5/8 in.	16 mm	52,800 lb	10.2 lb
3/4 in.	18 mm	64,400 lb	13.3 lb
13/16 in.	20 mm	82,000 lb	17.0 lb
7/8 in.	22 mm	90,800 lb	19.6 lb
1 in.	24 mm	109,000 lb	21.8 lb

Additional sizes available. Contact Customer Service for details.

ELASTIC ELONGATION:

10%	20%	30%
0.46%	0.70%	0.96%

After 50 cycles at % of break strength.

WITH Dyneema®

See Page 20 for AS-90 product details.



Class II

APPLICATIONS: Control Lines | Davits | Halyards | Lifelines | Reef Lines | Running Backs | Trapeze Lines

A high-performance 12-strand single braid of 100% Dyneema® fiber, AmSteel®-Blue yields the maximum strength-to-weight ratio, very low stretch, and is stronger than the same sized wire rope — yet it floats. It's the highest strength single braid Samson makes. Samthane coating enhances its already high abrasion and cut resistance. Adding a cover is recommended for areas controlled by winch or rope clutches.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
7/64 in.	2.5 mm	1,600 lb	0.30 lb
1/8 in.	3 mm	2,500 lb	0.50 lb
5/32 in.	4 mm	4,000 lb	0.75 lb
3/16 in.	5 mm	5,400 lb	1.0 lb
1/4 in.	6 mm	8,600 lb	1.6 lb
5/16 in.	8 mm	13,700 lb	2.7 lb
3/8 in.	9 mm	19,600 lb	3.6 lb
7/16 in.	11 mm	23,900 lb	4.2 lb
1/2 in.	12 mm	34,000 lb	6.4 lb
9/16 in.	14 mm	40,500 lb	7.9 lb
5/8 in.	16 mm	52,800 lb	10.2 lb
3/4 in.	18 mm	64,400 lb	13.3 lb
7/8 in.	22 mm	90,800 lb	19.6 lb
1 in.	24 mm	109,000 lb	21.8 lb

ELASTIC ELONGATION:

10%	20%	30%
0.46%	0.70%	0.96%

After 50 cycles at % of break strength.

FEATURES:

- > Size-for-size, the same strength as wire rope
- > Extremely low stretch
- > Lightweight
- > Floats
- > Superior wear and flex fatigue
- > Torque-free construction
- > Easily spliced
- > UV stabilized

CONSTRUCTION:

12-strand single-braid

FIBER:

100% Dyneema®

SPLICE/CLASS:

12-Strand Class II

COLORS:

Blue, some sizes also available by special order in black, gray, green, orange, red, or yellow

SPECIFIC GRAVITY: 0.98 (floats)



SAMSON ONLINE RESOURCES AT SAMSONROPE.COM

High-tech Resources for High-Performance Ropes

SamsonRope.com

For the most comprehensive and up-to-date information on high-performance ropes, the Samson website is your best resource. Specifically designed to enhance the user experience, you can easily access product information (including up-to-date specifications), technical papers, splice instructions, videos, product breakdowns by application and industry, and more.

Samson App for iPhone and iPad

Samson's app for the iPhone and iPad is designed for use in the field and on the job. It offers easy access to rope care and maintenance information. The inspection checklist covers conditions and rope characteristics that affect rope retirement. You can also evaluate internal and external abrasion conditions with the abrasion guide. The app also provides access to all of Samson's splice instructions and videos.





WITH
Dyneema®

FEATURES:

- > High strength
- > Extremely low stretch
- > Floats
- > Easy to splice
- > Extremely lightweight
- > Wire rope replacement

CONSTRUCTION:

12-strand single braid

FIBER:

Dyneema® Innegra™-S Blend

COLORS:

Black, blue, gray, green, orange, red, or yellow

SPLICE/CLASS:

12-Strand Class II

SPECIFIC GRAVITY 0.98 (floats)



This efficient 12-strand construction of Samthane-coated Dyneema® fiber makes AmSteel® an economical alternative to AmSteel®Blue. AmSteel® is a non-rotational rope that yields high strength and low stretch; equivalent to wire rope with 1/7th the weight. In addition, the product is flexible, easily spliced, and resists flex-fatigue and abrasion.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	7,400 lb	1.6 lb
5/16 in.	8 mm	10,500 lb	2.7 lb
3/8 in.	9 mm	15,500 lb	3.6 lb
7/16 in.	11 mm	18,000 lb	4.2 lb
1/2 in.	12 mm	27,500 lb	6.4 lb
9/16 in.	14 mm	34,000 lb	7.9 lb
5/8 in.	16 mm	40,700 lb	10.2 lb

ELASTIC ELONGATION:

10%	20%	30%
0.46%	0.70%	0.96%

After 50 cycles at % of break strength.



WITH
Dyneema®

FEATURES:

- > High strength
- > Low stretch
- > Solid grip on winch drums
- > Runs through blocks without kinking
- > Easy to handle
- > Lightweight
- > Easy to splice

CONSTRUCTION:

12-strand single braid

FIBER:

Dyneema®-Polyester Blend

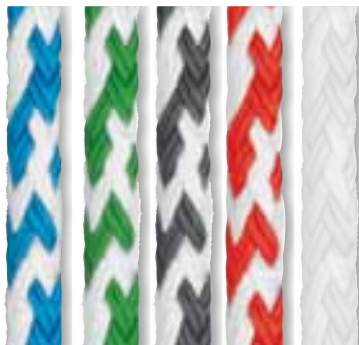
COLORS:

White with black, blue, green, red, or white tracers

SPLICE/CLASS:

12-Strand Class II

SPECIFIC GRAVITY: 1.14



Sheets, halyards, and control lines just got a little easier to handle. Control-DPX™ combines Dyneema® fiber and Samson's patented DPX™ technology into a strong, lightweight line that is winch- and cleat-friendly while being incredibly easy on the hands. DPX™ adds the grip and "soft-hand" of spun polyester to the lightweight strength of Dyneema® fiber. The result is an easily spliced, 12-strand single braid that performs well where winches are required without an added cover, while retaining the great "feel" you want in a mainsheet or guy. Control-DPX™ is not recommended for use with self-tailing winches.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	3,700 lb	1.3 lb
5/16 in.	8 mm	5,600 lb	1.8 lb
3/8 in.	9 mm	9,300 lb	2.9 lb
7/16 in.	11 mm	11,000 lb	3.6 lb
1/2 in.	12 mm	14,000 lb	4.7 lb

ELASTIC ELONGATION:

10%	20%	30%
0.80%	1.06%	1.32%

After 50 cycles at % of break strength.

**SAMSON
PATENTED
TECHNOLOGY**

Class II

APPLICATIONS: Control Lines | Halyards | Mainsheets | Jib/Genoa Sheets | Spinnaker Sheets

Designed for the club racer, but also suitable for the performance-oriented cruiser, MLX is a double braid construction that incorporates a Dyneema® core with a polyester cover.

MLX is a lightweight core-dependent line that has excellent strength and low stretch. The core is Samthane coated to match the color of the cover, making the line strippable for greater weight savings.

FEATURES:

- > Samthane-coated core that matches the cover
- > Can be tapered
- > Polyester cover
- > High strength
- > Low stretch
- > Lightweight

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	3,800 lb	1.6 lb
5/16 in.	8 mm	4,500 lb	3.0 lb
3/8 in.	9 mm	7,200 lb	3.8 lb
7/16 in.	11 mm	9,500 lb	5.8 lb
1/2 in.	12 mm	15,000 lb	8.2 lb

ELASTIC ELONGATION:

10%	20%	30%
0.70%	0.90%	1.1%

After 50 cycles at % of break strength.

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema® / Polyester

COLORS:

Variegated black, blue, green, red, or white with matching cores

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.15



Samson DPX™ technology—getting a grip with HMPE

HMPE fiber, like Dyneema® is incredibly strong and offers many advantages for the competitive sailor. Its strength is matched with light weight, making it a perfect choice for any lines used aloft.

While HMPE excels in strength-to-weight ratio, it has a very low coefficient of friction (COF). It is notoriously slippery. While that makes for better abrasion resistance, it becomes problematic when you need to trim it with a winch or cleat it off. Adding a polyester cover increases the rope's grip for winches and cleats, but adds weight.



The Answer: DPX™ technology

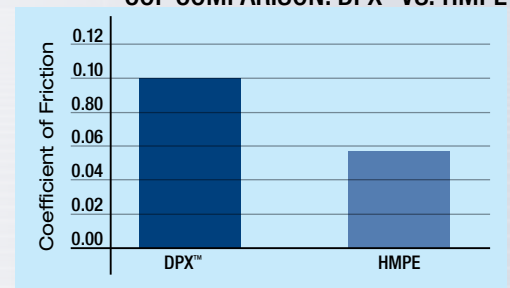
There is another alternative to adding a separate cover or coating the rope with polyurethane. Samson engineers have developed a patented technology—DPX™—that marries the advantages of HMPE fiber for strength and light weight with polyester's higher COF. In a proprietary process, spun polyester fibers are blended with Dyneema® fiber at the surface of the strands. Samson's DPX™ technology allows a single braided rope to retain most of the strength and weight characteristics of Dyneema® while adding the surface characteristics and COF of spun polyester. DPX™ technology also increases the rope's abrasion resistance over untreated HMPE or other traditional fibers.

Control-DPX™

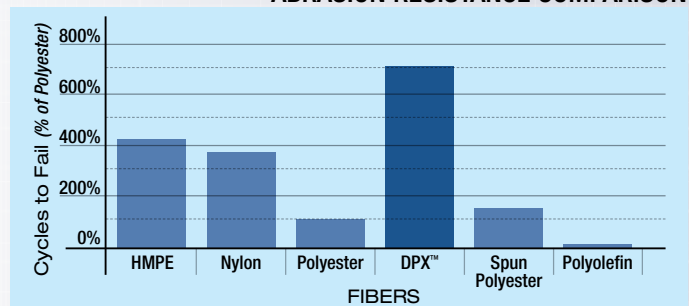
Samson's new Control-DPX™ is the first line designed for the competitive sailor that includes this exclusive technology. The result is a line that is soft and flexible with a great "hand," perfect for sheets and control lines that are often handled and trimmed. The high COF grips winch drums and stays secure in rope clutches and cleats. Its 12-strand single braid construction makes splicing quick and easy.

DPX™ TECHNOLOGY

COF COMPARISON: DPX™ VS. HMPE



ABRASION RESISTANCE COMPARISON





FEATURES:

- > High strength
- > Low stretch
- > Negligible creep
- > Excellent abrasion resistance

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Vectran®-Dyneema® Blend / Polyester

COLORS:

Blue with green, red, or white tracers and matching cores

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.28

Validator SKB is the strongest in Samson's jacketed Validator series, blending the high strength and low stretch of Dyneema® fiber with the exceptionally low creep properties of Vectran® fiber. The 24-strand polyester cover provides excellent abrasion resistance and performance on winches and in clutches.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16 in.	5 mm	4,800 lb	1.3 lb
1/4 in.	6 mm	6,300 lb	2.5 lb
5/16 in.	8 mm	8,000 lb	3.0 lb
3/8 in.	9 mm	12,900 lb	5.2 lb
7/16 in.	11 mm	16,500 lb	7.6 lb
1/2 in.	12 mm	22,800 lb	8.7 lb
9/16 in.	14 mm	32,500 lb	12.0 lb
5/8 in.	16 mm	42,600 lb	15.5 lb
3/4 in.	18 mm	53,400 lb	20.4 lb

ELASTIC ELONGATION:

10%	20%	30%
0.49%	0.72%	0.92%

After 50 cycles at % of break strength.



Look for chafing at your masthead. Be sure you have smooth fittings aloft to minimize wear on halyards.

TECH TIP: STRIPPING COVERS

Stripping covers from core-dependent double braids

Many high-performance sailors like to strip the covers from core-dependent double braids to save weight, but it is important to leave the cover intact wherever the line needs to be cleated, worked on a winch, or through a rope clutch or stopper. Complete instructions for stripping covers are available on our website at SamsonRope.com.

Please note that covers cannot be stripped from any Class I double braid rope without seriously compromising the rope's strength.



Class II

APPLICATIONS: Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Spinnaker Guys

A 100% Vectran® fiber core gives Validator II both very high strength and exceptionally low creep in static load applications. The 24-strand polyester cover protects the core from abrasion and handles easily while performing well on winches and in stoppers.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16 in.	5 mm	3,300 lb	1.4 lb
1/4 in.	6 mm	5,000 lb	2.2 lb
5/16 in.	8 mm	7,000 lb	3.7 lb
3/8 in.	9 mm	11,000 lb	5.0 lb
7/16 in.	11 mm	15,200 lb	7.0 lb
1/2 in.	12 mm	20,000 lb	9.0 lb
9/16 in.	14 mm	26,000 lb	12.0 lb
5/8 in.	16 mm	30,000 lb	14.4 lb
3/4 in.	18 mm	45,000 lb	20.3 lb
7/8 in.	22 mm	63,000 lb	27.0 lb
1 in.	24 mm	80,000 lb	35.0 lb

ELASTIC ELONGATION:

10%	20%	30%
0.59%	0.78%	0.98%

After 50 cycles at % of break strength.

FEATURES:

- > High strength
- > Extremely low stretch
- > Negligible creep
- > Excellent abrasion resistance
- > Firm construction
- > Wire rope replacement

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Vectran® / Polyester

COLORS:

Gray with black, blue, green, or red tracers and matching cores

SPLICE/GLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.39



Class II

APPLICATIONS: Davits | Halyards | Running Backs

Validator-12 is a 12-strand construction made of 100% Vectran® fiber. This easy-to-splice, exceptionally low creep line is extremely strong and lightweight.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
7/64 in.	2.5 mm	2,000 lb	0.50 lb
1/8 in.	3 mm	2,700 lb	0.60 lb
3/16 in.	5 mm	5,500 lb	1.3 lb
1/4 in.	6 mm	9,400 lb	2.2 lb
5/16 in.	8 mm	14,000 lb	3.6 lb
3/8 in.	9 mm	19,500 lb	4.6 lb
7/16 in.	11 mm	23,500 lb	6.1 lb
1/2 in.	12 mm	35,000 lb	8.8 lb
9/16 in.	14 mm	43,000 lb	10.8 lb
5/8 in.	16 mm	55,000 lb	14.0 lb

ELASTIC ELONGATION:

10%	20%	30%
0.49%	0.78%	0.98%

After 50 cycles at % of break strength.

FEATURES:

- > High strength-to-weight ratio
- > Extremely low stretch
- > Negligible creep
- > Samthane coated
- > Non-rotational
- > Heat resistant
- > Excellent durability
- > Abrasion resistant
- > Wire rope replacement

CONSTRUCTION:

12-Strand single braid

FIBER:

Vectran®

COLORS:

Black, blue, green, or red

SPLICE/GLASS:

12-Strand Splice Class II

SPECIFIC GRAVITY: 1.39



High-performance braided ropes are designed to turn on a radius of 8 times the rope's diameter. Make sure your sheaves measure up.

Lightning Rope Product Code: 379



APPLICATIONS: Control Lines | Halyards | Running Backs | Trapeze Lines

Class II



Adding covers to prevent chafe where lines are held by clutches adds to the life of your lines. Check out Smooth Ice and Flavored Ice on page 20.



FEATURES:

- > High strength-to-weight ratio
- > Extremely low stretch

CONSTRUCTION:

12-strand single braid

FIBER:

Vectran®-Dyneema® blend

COLORS:

Black, blue, green, or red

SPLICE/CLASS:

12-Strand Class II

SPECIFIC GRAVITY: 1.1

This 12-strand construction blends Vectran® and Dyneema® fibers into a reliable, lightweight line with very low stretch and exceptionally low creep. It is great for use where static loads are anticipated and weight is an issue.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
7/64 in.	2.5 mm	1,400 lb	0.40 lb
1/8 in.	3 mm	2,100 lb	0.50 lb
3/16 in.	5 mm	5,400 lb	1.0 lb
1/4 in.	6 mm	7,900 lb	1.5 lb
5/16 in.	8 mm	13,500 lb	2.6 lb
3/8 in.	9 mm	18,500 lb	3.5 lb

ELASTIC ELONGATION:

10%	20%	30%
0.59%	0.68%	0.77%

After 50 cycles at % of break strength.

Ultra-Tech Product Code: 443



APPLICATIONS: Control Lines | Jib/Genoa Sheets | Halyards | Mainsheets | Spinnaker Guys | Spinnaker Sheets

Class II



FEATURES:

- > Economical
- > Negligible creep
- > Works well around sheaves and winches
- > High strength
- > Heat resistant
- > Flexible

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Technora®/ Polyester

COLORS:

Burgundy with black, blue, green, or red tracers and matching cores

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.38

Ultra-Tech combines high performance with great value. This core-dependent double braid consists of a braided Technora®-fiber core as the strength member with a 24-strand braided polyester cover. Technora® is a high-strength, heat-resistant fiber with low stretch. Technora® fiber also has better resistance to flex-fatigue than other aramid fibers.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16 in.	5 mm	2,300 lb	1.0 lb
1/4 in.	6 mm	4,800 lb	2.1 lb
5/16 in.	8 mm	7,800 lb	4.0 lb
3/8 in.	9 mm	10,000 lb	4.6 lb
7/16 in.	11 mm	14,800 lb	6.4 lb
1/2 in.	12 mm	20,000 lb	9.8 lb
5/8 in.	16 mm	42,000 lb	14.5 lb
3/4 in.	18 mm	51,000 lb	19.7 lb
7/8 in.	22 mm	68,000 lb	27.5 lb

ELASTIC ELONGATION:

10%	20%	30%
0.63%	0.97%	1.24%

After 50 cycles at % of break strength.

This Samthane-coated 12-strand is made with 100% Technora® fiber and offers excellent heat resistance in addition to a high resistance to flex fatigue.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/8 in.	3 mm	2,800 lb	0.6 lb
3/16 in.	5 mm	5,600 lb	1.3 lb
1/4 in.	6 mm	8,200 lb	1.9 lb
5/16 in.	8 mm	13,000 lb	3.2 lb
3/8 in.	9 mm	18,000 lb	4.3 lb
7/16 in.	11 mm	28,000 lb	6.7 lb
1/2 in.	12 mm	33,000 lb	8.0 lb
5/8 in.	16 mm	43,000 lb	13.5 lb

ELASTIC ELONGATION:

10%	20%	30%
0.63%	0.96%	1.20%

After 50 cycles at % of break strength.

FEATURES:

- > Easy to splice
- > Samthane coated
- > Works well around sheaves and winches
- > Excellent heat resistance
- > Non-rotational
- > Negligible creep
- > Wire rope replacement
- > High strength
- > Flexible

CONSTRUCTION:

12-strand single braid

FIBER:

Technora®

COLORS:

Black, blue, green, or red

SPLICE/CLASS:

12-Strand Class II

SPECIFIC GRAVITY: 1.39



DEMYSTIFYING ELONGATION AND CREEP

Elongation

There is so much to consider with the various forms of elongation in synthetic ropes—elastic elongation, hysteresis, permanent elongation while working, permanent elongation after relaxed, and cold flow, or creep—but what does the sailor need to know about it?

What does the sailor need to know about elongation?

You need consistency from tack to tack, so what happens when a synthetic rope is placed under a load?

The first time a new rope is loaded, the braid compacts slightly, and depending on the construction, small helical changes take place.

The result is a permanent extension that will not change over the life of the rope. By cycling the rope under a load a number of times before you use it in competition, this constructional elongation can be eliminated.

Elastic elongation (EE) is a characteristic of the fiber or fibers used in the construction. It is that portion of the extension that is immediately recoverable when the load is released. Elastic elongation is expressed as a percentage of the length at a standard load based on a percentage (10%, 20%, or 30%) of the breaking strength. Elastic elongation can only be reduced by moving up to a larger diameter line, a line with higher breaking strength, or a line with a lower measured elasticity.

Hysteresis, another form of elongation, is not recovered immediately when a load is released, but over hours or even days. This is generally negligible in the scheme of the racing sailor.

Creep: Is it a problem for most sailors?

Creep is the most misunderstood concept of rope elongation. It is defined as fiber deformation (elongation) due to molecular slippage under a constant, static loading situation.

Some fibers such as polypropylene and HMPE exhibit characteristics of creep, but if minor fluctuations occur in the rate and frequency of load levels, these characteristics are negligible.

Creep becomes problematic over time at constant loads. On a sailboat—racing or cruising—a constant load is extremely rare. The effect of tacking, and changes in wind and sail trim all create nearly continuous changes in the loads under which your lines are subjected. Creep is often measured in state-of-the-art fibers by maintaining constant, very high static loads over periods of weeks, not hours or minutes.

Not all HMPE fibers have the same creep characteristics. Dyneema® SK90, used in Samson's AS-90, has been specially developed for enhanced creep performance. Blending an exceptionally low creep fiber like Vectran® with Dyneema® fiber with negligible creep, results in a line with the exceptionally low creep of Vectran® fiber, and lighter weight than a 100% Vectran® fiber rope.



Creep is measured over a period of weeks, not hours or minutes.

Upgrade Your Halyards

Have you ever had a difficult time furling your jib when the breeze picked up? Many times this is due to an old halyard that is stretching. This causes your jib to sag at the luff and keeps the furler from spinning freely.

Upgrade your halyards to MLX, XLS Extra, or any of Samson's low stretch, lightweight, high-strength options, and watch your jib furl easier under all conditions.



Photo © Billy Black

Use a blended-core halyard on a jib furler so you do not stretch the sail beyond its design.

XLS Extra

Product Code: 442



APPLICATIONS: Control Lines | Dinghy Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Reef Lines | Spinnaker Guys | Spinnaker Sheets

Class II



FEATURES:

- > Excellent wire halyard replacement
- > Lighter weight than double-braid polyesters
- > Low stretch

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema®-MFP Blend / Polyester

COLOR:

Navy blue with beige, blue, green, or red tracers

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.17

XLS Extra was created for performance-oriented cruisers and club racers who want higher strength and lighter weight than polyester double braids. This line offers the smooth flexibility of a 24-strand braided polyester cover with a braided core made from a blend of MFP and Dyneema® fibers. The result is better performance than polyester double braids at a better value than high-performance ropes.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	2,300 lb	2.1 lb
5/16 in.	8 mm	3,500 lb	3.2 lb
3/8 in.	9 mm	4,600 lb	4.0 lb
7/16 in.	11 mm	6,100 lb	5.7 lb
1/2 in.	12 mm	8,700 lb	7.7 lb

ELASTIC ELONGATION:

10%	20%	30%
0.50%	0.80%	1.00%

After 50 cycles at % of break strength.

WITH Dyneema®



Class II

APPLICATIONS: Control Lines | Dinghy Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Reef Lines | Spinnaker Guys | Spinnaker Sheets

XLS Extra T has same great performance of XLS Extra with the classic look of a white cover.

XLS Extra T is available in all white or with red, blue, or green tracers.

FEATURES:

- > Excellent wire halyard replacement
- > Lighter weight than double-braid polyesters
- > Low stretch

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema®-MFP Blend / Polyester

COLOR:

White or white with blue, green, or red tracers

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 1.17



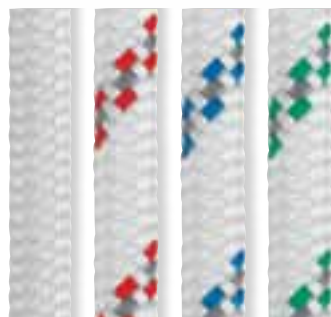
SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	2,300 lb	2.1 lb
5/16 in.	8 mm	3,500 lb	3.2 lb
3/8 in.	9 mm	4,600 lb	4.0 lb
7/16 in.	11 mm	6,100 lb	5.7 lb
1/2 in.	12 mm	8,700 lb	7.7 lb

ELASTIC ELONGATION:

10%	20%	30%
0.50%	0.80%	1.00%

After 50 cycles at % of break strength.



Class II

APPLICATIONS: Dinghy Control Lines | Light-Air Sheets | Mainsheets | Spinnaker Sheets

Ultra-Lite is great for light-wind sheets. This lightweight, floating double braid has a 24-strand MFP cover and a blended core of MFP and Dyneema® fiber.

Ultra-Lite is available with a black, red, green, or blue cover, and yellow tracers.

FEATURES:

- > Floats
- > High strength
- > Low stretch

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema®-MFP Blend / MFP

COLORS:

Black, blue, green, or red — all with yellow tracers

SPLICE/CLASS:

Double Braid Class II

SPECIFIC GRAVITY: 0.94 (floats)



SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16* in.	5 mm	1,200 lb	0.90 lb
1/4* in.	6 mm	2,200 lb	1.9 lb
5/16 in.	8 mm	2,900 lb	2.5 lb
3/8 in.	9 mm	4,400 lb	3.2 lb

*3/16" and 1/4" are not spliceable.

ELASTIC ELONGATION:

10%	20%	30%
0.50%	0.80%	1.00%

After 50 cycles at % of break strength.



Splicing Made Easy

Putting a knot in a rope seems innocent enough—until you realize that most knots significantly reduce the strength of the rope. Tight bends are the main culprit. Samson recommends that all ropes be terminated with a splice. Properly performed, splices retain 90–100% of the new rope strength, and they look a lot more professional. All published strengths in this catalog are for spliced ropes.

Samson ropes are classified as either Class I or Class II depending on the fibers used. Splicing procedures are different for each class. Always make certain you use the correct splice for the rope you're working with.

Instructions for splicing Samson ropes can be downloaded for free at SamsonRope.com. Our comprehensive Splicing Manual and Splicing DVDs are available through Samson distributors and dealers.



XLS Yacht Braid, XLS Tracers & XLS Solid Color

White /Tracers: 455
Colors: 456



APPLICATIONS: Control Lines | Davits | Dinghy Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Reef Lines | Spinnaker Guys | Spinnaker Sheets

Class I



FEATURES:

- > Highest strength double braid polyester rope
- > Lowest stretch of our polyester double braids
- > Excellent abrasion resistance

CONSTRUCTION:

Double braid

FIBER (CORE/COVER):

Polyester / Polyester

XLS SOLID COLOR COLORS:

Black, blue, green, or red

XLS YACHT BRAID COLORS:

White or white with blue, green, or red tracers — all with green and red variegated ID

SPLICE/CLASS:

Double Braid Class I

SPECIFIC GRAVITY: 1.38

XLS Yacht Braid is our most popular family of polyester double braids. Cruising sailors who desire optimal performance will appreciate this low stretch construction, its smooth rendering, and long service life.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16 in.	5 mm	1,200 lb	1.3 lb
1/4 in.	6 mm	2,200 lb	2.3 lb
5/16 in.	8 mm	3,300 lb	3.3 lb
3/8 in.	9 mm	4,400 lb	4.3 lb
7/16 in.	11 mm	5,800 lb	6.4 lb
1/2 in.	12 mm	8,300 lb	8.2 lb
9/16 in.	14 mm	11,000 lb	10.1 lb

Larger sizes available in XLS and XLS Tracers.

ELASTIC ELONGATION:

10%	20%	30%
1.50%	2.20%	2.90%

After 50 cycles at % of break strength.

*Please note the 3/16" diameter is not spliceable due to its parallel core construction.

XLS White

XLS Tracers

XLS Solid Color



Class I

APPLICATIONS: Control Lines | Jib/Genoa Sheets | Mainsheets | Spinnaker Sheets

Trophy Braid is excellent for cruising sailors who want a rope with a soft hand. This line has a soft, fuzzy cover that is easy on the hands. This double-braid construction has a spun polyester cover and a polyester core.

Trophy Braid is available in white, black, red, blue, or green with a variegated red and green ID.

FEATURES:

- > Easy to hold, wet or dry
- > Holds well in all types of cleats
- > Has a solid grip on winch drums

CONSTRUCTION:
Double braid

FIBER (CORE/COVER):
Polyester / Spun Polyester

COLORS:
Black, blue, green, red, or white
— all with a green and red ID

SPLICE/CLASS:
Double Braid Class I

SPECIFIC GRAVITY: 1.38



SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16* in.	5 mm	800 lb	1.0 lb
1/4 in.	6 mm	1,400 lb	1.8 lb
5/16 in.	8 mm	2,000 lb	2.7 lb
3/8 in.	9 mm	3,000 lb	3.6 lb
7/16 in.	11 mm	4,000 lb	5.5 lb
1/2 in.	12 mm	6,000 lb	7.0 lb

*3/16" are not spliceable.

ELASTIC ELONGATION:

10%	20%	30%
2.20%	3.10%	3.80%

After 50 cycles at % of break strength.



Class I

Product Code: 450

LS and LST Yacht Braid

APPLICATIONS: Control Lines | Jib/Genoa Sheets | Mainsheets | Reef Lines | Spinnaker Sheets

LS and LST are good general-purpose yacht braids for any application. This line is made with Samson's double-braid construction and has both a polyester cover and core.

LS is white with a variegated red and green ID.
LST is white with black, red, blue, or green tracers.

FEATURES:

- > High strength
- > Great "hand"
- > Excellent flexibility
- > Excellent abrasion resistance

CONSTRUCTION:
Double braid

FIBER (CORE/COVER):
Polyester / Polyester

COLORS:
White with green and red ID or white with black, blue, green, or red tracers

SPLICE/CLASS:
Double Braid Class I

SPECIFIC GRAVITY: 1.38



SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16* in.	5 mm	1,200 lb	1.3 lb
1/4 in.	6 mm	1,900 lb	2.2 lb
5/16 in.	8 mm	2,300 lb	3.0 lb
3/8 in.	9 mm	3,700 lb	3.8 lb
7/16 in.	11 mm	4,900 lb	6.1 lb
1/2 in.	12 mm	7,000 lb	7.4 lb
5/8 in.	16 mm	11,000 lb	11.3 lb


*3/16" are not spliceable.

ELASTIC ELONGATION:

10%	20%	30%
1.80%	2.60%	3.30%

After 50 cycles at % of break strength.





AS-90
XCEED-78
SMOOTH ICE

Pushing the boundaries of fiber technology and rope construction to achieve ultimate performance

The possibilities in rope design are endless as technology moves along a continuous cycle. It is an everyday practice for Samson to invest resources in the research and development of fiber, coatings, and rope constructions. Samson's team of scientists and engineers constantly look for ways to push the boundaries of traditional rope making and rope performance in order to provide you with the best products available. Even a minor change in our lab can make a major difference in your performance on the race course. Providing you with the most advanced products on the market is what we do best. It's part of what we call The Samson Advantage, our customers call it peace of mind.

Samson's team of scientists and engineers constantly look for ways to push the boundaries of traditional rope making and rope performance in order to provide you with the best products available.

Four of the products you will find in our Specialty Product section are Xceed-78, AS-90, Smooth Ice/Flavored Ice, and Lash-It! These products bring performance to new levels: stronger, lighter, lower stretch lines that perform dependably race after race, tack after tack.

Where the vision starts. Competition spurs innovation. Working with riggers and competitive racers, we get feedback on their greatest challenges. Flavored Ice was designed to protect high-performance ropes from abrasion and heat caused by friction under load. It blends Vectran® and PBO® fibers into a cover-only construction that is applied to those areas of the rope that are subjected to high temperatures, need to be cleaned, or run through stoppers. Tested in the 2007 TansPac race, this innovation proved both effective and reliable.

Research, testing, and special handling to ensure performance. Before one of the world's new "super fibers" or other cutting-edge technology makes its debut in the Samson product line-up, it needs to pass stringent requirements set up by Samson's team of R&D scientists and engineers. This is where design, performance, and practicality find balance.

The art of a talented rope designer is brought to bear in ropes where two or more fibers are blended to exploit the best characteristics of both fibers while overcoming the shortcomings of either. XLS Extra was among the first ropes to blend the reliability of MFP with the high strength, light weight, and low elongation of Dyneema® fiber. This created a rope that was lighter, stronger, and had lower elongation; while being relatively economical compared to ropes with all high-modulus fiber content. The tradition continues with ropes like Lightning Rope, Validator SKB (blended Vectran® and Dyneema® fibers), and Control-DPX™ (incorporating a patented blend of Dyneema® and polyester fibers). Other design elements include added coatings, constructional design, chafe materials, hardware, etc.



Photos © Billy Black

Another consideration is special handling requirements while manufacturing a rope. PBO is a case in point. To maximize strength in the final product, unique procedures to limit UV exposure needed to be developed. Specialized coatings designed to enhance performance and longevity are applied at different stages of production, depending on the rope and the applications it is designed for.

Finally, testing is a critical stage in the design and manufacture of ropes. Samson R&D maintains the largest capacity testing machine for synthetic rope in the industry, capable of testing to 1.1 million pounds. Samson's test methods exceed the industry's standard methods, incorporating more stringent specifications than most manufacturers. Testing for elongation, breaking force, stiffness, and abrasion resistance are all part of the procedure for every rope. Samples are braided, splices are tested, and no product is finalized until all its characteristics are fully understood and tested in real-world applications.

Science, the key to success. As you can see, designing a line for a specific application means understanding all of its characteristics and managing expectations to properly plan for all possible actions and reactions. Samson backs each one of its lines with rigorous testing. We balance strength, weight, abrasion resistance, heat tolerance, and elongation with a host of other parameters in order to provide you with the most advanced engineered products in the sailing world.

Samson's test methods exceed the industry's standard methods, incorporating more stringent specifications than most manufacturers. Samples are braided, splices are tested, and no product is finalized until all its characteristics are fully understood and tested in real-world applications.

XCEED-78

Specifically designed for use on high-performance mega yachts where extreme loads on halyards and sheets demand a large diameter line. It combines high strength, low creep, and the extremely low weight of a 100% braided Dyneema® SK78 core with the protection of a heavy duty, all-polyester cover.

AS-90

AS-90 brings high-tech performance to a new level through the use of Dyneema® SK90, the latest in fiber technology. This 12-strand construction provides a 12% increase in strength and greater linear elastic stiffness, which results in less elongation with an increasing load when compared with other Dyneema® fiber lines. AS-90 maintains the same lightweight, durable, and easy handling characteristics that lines made with Dyneema® are known for.

Delivering precise trim control for higher speeds in the extreme conditions of world-class racing, AS-90 offers the racing community the next generation in high-performance lines. Add a cover (Flavored Ice/Smooth Ice) where you need to cleat it or it runs through stoppers.

SMOOTH ICE AND FLAVORED ICE

Specifically designed to work with and protect Samson's high-performance single braid ropes, Smooth Ice and Flavored Ice are cover-only constructions. Both have polyester added to provide multiple color options. This fiber combination gives the Ice products excellent resistance to abrasion and heat build-up caused by friction under load. Use it wherever single braids need to be cleated, pass through stoppers, or clutches. A messenger line is incorporated into the construction so installation is easy.



LASH-IT!

Lash-It! is a single braid constructed with Dyneema® fiber. It has been called "the sailor's duct tape" because of all its uses—from lashing blocks to securing lifelines. It is incredibly strong, light enough to float, and doesn't absorb water. It's twine with an attitude. *See page 26 for full details.*



FEATURES:

- > Negligible creep
- > 12% increase in strength over AmSteel® Blue and AS-78
- > Good linear stiffness

CONSTRUCTION:

12-strand single braid

FIBER:

Dyneema® SK90

COLOR:

White

SPLICE/CLASS:

12-Strand Class II Splice

SPECIFIC GRAVITY

0.98 (floats)

AS-90 brings high-tech performance to a new level through the use of Dyneema® SK90 fiber technology. This 12-strand construction provides a 12% increase in strength and greater linear elastic stiffness, which results in less elongation with an increasing load when compared with other Dyneema® fiber lines. AS-90 maintains the same lightweight, durable, and easy handling characteristics that lines made with Dyneema® are known for.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/8 in.	3 mm	2,900 lb	0.5 lb
3/16 in.	5 mm	6,100 lb	1.0 lb
1/4 in.	6 mm	9,700 lb	1.5 lb
5/16 in.	8 mm	15,400 lb	2.6 lb
3/8 in.	9 mm	22,100 lb	3.5 lb

ELASTIC ELONGATION:

10%	20%	30%
0.47%	0.63%	0.84%

After 50 cycles at % of break strength.

Smooth Ice/Flavored Ice

Smooth Ice: 711
Flavored Ice: 710



Smooth Ice and Flavored Ice are color-coded running rigging protection systems specifically designed to work with Samson's high-performance, single braid ropes. The colors allow them to be used in multiple applications around the boat. The cover-only constructions provide protection from heat build up and abrasion. Smooth Ice and Flavored Ice come with built-in messenger lines for easy installation.

FEATURES:

- > Color coding of halyards, sheets, and other running rigging
- > Messenger line is built in for easy installation
- > Excellent heat resistance
- > Excellent abrasion resistance

SMOOTH ICE SPECIFICATIONS:

CONSTRUCTION: Cover only

FIBER: Dyneema®-Technora®-Polyester Blend

COLORS: Variegated black, burgundy, or orange

SPECIFIC GRAVITY: 1.30

MODEL	Fits Rope Diameter INCHES	Weight Per 100 ft. POUNDS
A	1/8 in. – 1/4 in.	0.90 lb
B	5/16 in. – 1/2 in.	1.8 lb
C	9/16 in. – 5/8 in.	2.7 lb

Model A, B, and C are available in variegated black, burgundy, or orange.



FLAVORED ICE SPECIFICATIONS:

CONSTRUCTION: Cover only

FIBER: Vectran®-Zylon® Blend

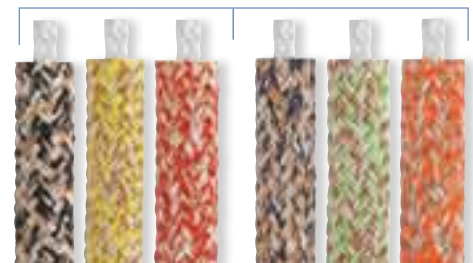
COLORS: Varies by diameter: MODEL A black, red, or yellow; MODEL B blue, green, or orange

SPECIFIC GRAVITY: 1.43

MODEL	Fits Rope Diameter INCHES	Weight Per 100 ft. POUNDS
A	1/4 in. – 3/8 in.	3.5 lb
B	7/16 in. – 9/16 in.	4.8 lb

Model A

Model B



Model A is available in black, red, or yellow.

Model B is available in blue, green, or orange.

Class I

APPLICATIONS: Control Lines | Halyards | Jib/Genoa Sheets | Mainsheets | Spinnaker Guys

Xceed-78 is specifically designed for use on high-performance mega yachts where extreme loads on halyards and sheets demand a large diameter line. It combines high strength, low creep, and the extremely low weight of a 100% braided Dyneema® SK78 core with the protection of a heavy duty, all-polyester cover.

SPECIFICATIONS:

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
5/8 in.	16 mm	33,800 lb	12.6 lb
3/4 in.	18 mm	43,800 lb	16.0 lb
13/16 in.	20 mm	50,000 lb	20.3 lb
7/8 in.	22 mm	62,500 lb	24.8 lb
1 in.	24 mm	71,300 lb	29.7 lb
1-1/4 in.	30 mm	101,000 lb	42.6 lb
1-5/16 in.	32 mm	114,000 lb	48.0 lb
1-1/2 in.	36 mm	138,000 lb	54.1 lb
1-5/8 in.	40 mm	162,000 lb	67.3 lb
1-3/4 in.	44 mm	169,000 lb	70.5 lb
2 in.	48 mm	210,000 lb	106 lb

ELASTIC ELONGATION:

10%	20%	30%
0.50%	0.67%	0.96%

After 50 cycles at % of break strength.

FEATURES:

- > High strength
- > Very low creep
- > Excellent abrasion resistance
- > Lightweight
- > Strippable heavy-duty cover
- > Color-coded core matches tracers

CONSTRUCTION:

Core-dependent double braid

FIBER (CORE/COVER):

Dyneema® SK78 / Polyester

COLORS:

White or white with blue, green, or red tracers and matching cores

SPLICE/CLASS:

Double Braid Class II Splice

SPECIFIC GRAVITY: 1.20



"Jordan and I love the Samson products because they provide us with the strongest and lightest rope on the market. AmSteel® products with Dyneema® are great for low-stretch halyards and MLX is great for jib and spinnaker sheets where you need to combine low stretch with durability in cleats."

MATTHEW WEFER AND JORDAN FACTOR

Men's 470, U.S. Sailing Team 2013

Paralympic bronze medal winners

"Our boat handling and performance depend on the quality and dependability of our equipment. As crew of the SKUD18, I count on my lines to run smooth, provide strength, and handling comfort under a variety of sailing conditions. Samson lines delivered this reliable performance during our training and at the Games. Our sheets and halyards from Samson were a contributing factor to our success at the 2008 Paralympic Games."

STACIE LOUTTIT, Bronze Medallist, 2008 Paralympic Games, Sailing



"Justin and I have become big fans of Samson ropes over the years. The lines feel light, yet are strong and durable. We've never snapped a Samson line and we're confident in their performance on the race track."

DAVID MORI AND JUSTIN BARNES

49er-skiff-class, 5th ISAF World Cup:
Miami and Canadian Sailing Team qualifiers



Dock & Anchor Lines

Whether power or sail, the most frequently used lines aboard are the dock and anchor lines



It's a fact of the boating life that, for most of us, our boats spend more time at the dock or moored than underway. Protect your investment and give yourself a little peace of mind by ensuring that you've got the best dock and anchor lines available.

Is there really a difference?

All dock and anchor lines are created equal, right? Not really. All of Samson lines are built with 100% premium nylon that provides excellent stretch and flexibility. Nylon's elastic elongation properties help smooth out the surge effects of wakes, waves, wind, or heavy seas, making nylon the perfect fiber for dock and anchor lines. All of Samson's colored dock lines are produced with solution-dyed nylon so the color will not bleed or fade.

Consistent quality from the company that moors more vessels than any other

Our recreational marine products are subjected to the same rigorous testing and quality control under which we produce mooring lines and hawsers for some of the world's largest vessels. You can be sure that Samson dock and anchor lines are the same diameter and length as those printed on the box. They are also professionally prespliced, with thimbles included on all anchor lines.

Gold-N-Braid, Solid Color

Solution-dyed before braiding, our colored lines stay true. The color won't wind up on your deck and they will resist fading far longer than lines that are dyed by other methods. Gold-N-Braid and Solid Color are constructed of a braided nylon core and braided nylon cover that gives excellent stretch and flexibility. Gold-N-Braid uses a white and gold nylon cover, while Solid Color lines are available in royal blue, navy, or black. Both excel wherever strength, elastic elongation, and abrasion resistance are critical.

Super Strong

Super Strong is the highest strength dock and anchor line offered by Samson. It is constructed of a braided nylon core and braided nylon cover. We apply our Pro-Gard marine finish to further enhance this rope's strength performance, particularly when wet. It has a white cover with blue and red tracers, and has excellent elastic elongation to meet the most demanding mooring conditions.

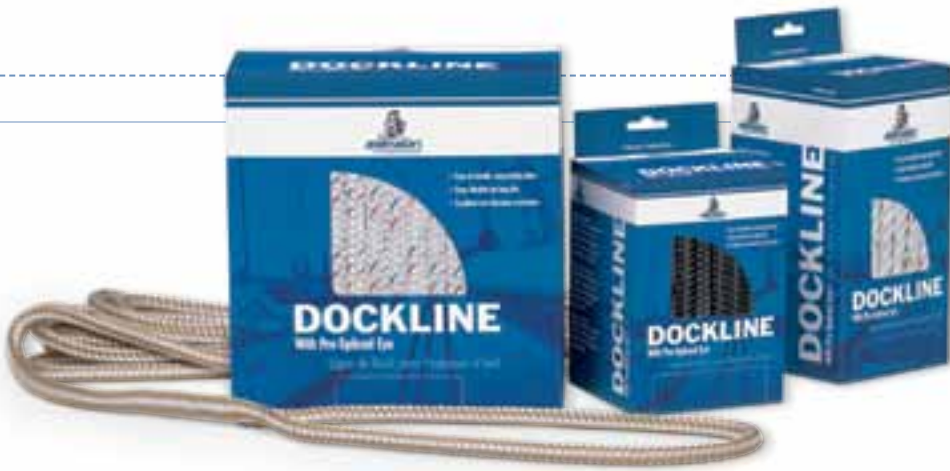
Pro-Set-3

Samson combines a premium nylon with our 4-stage manufacturing process and heat stabilization to produce a truly premium 3-strand rope. This 4-stage process creates a 3-strand rope with superior abrasion properties and provides a long, dependable service life.

Samson's stabilization process for Pro-Set-3 ensures the rope will stay firm but flexible and will not shrink after being used. Many competing products are not heat-stabilized, resulting in dramatic shrinkage after being wet for the first time. Conversely, Samson's unique stabilization process of the finished rope results in less than 2% residual shrinkage and a line that does not harden after exposure to the elements.

Dock Lines

Standard packages, sizes, or custom



Choices—because not all boats are the same

Samson offers two different constructions. Dock lines are available in either double braid (Gold-N-Braid, Solid Color, or Super Strong) or Pro-Set Nylon, a 4-stage 3-strand twisted construction.

Dock lines are available prepackaged in a variety of diameters and lengths with an eye spliced on one end. Custom sizes and lengths to suit specific mooring requirements are available; consult your local Samson dealer.

Dock Line Selection Guide

Strengths are approximate averages of new rope.

Boat Size	Gold-N-Braid	Solid Color	Super Strong	Pro-Set-3
15–25 ft	3/8 in. 4,500 lb	3/8 in. 4,500 lb	3/8 in. 4,900 lb	3/8 in. 3,600 lb
26–30 ft	3/8 in. 4,500 lb	3/8 in. 4,500 lb	3/8 in. 4,900 lb	1/2 in. 6,300 lb
31–35 ft	3/8 in. 4,500 lb	3/8 in. 4,500 lb	3/8 in. 4,900 lb	1/2 in. 6,300 lb
36–40 ft	1/2 in. 7,900 lb	1/2 in. 7,900 lb	1/2 in. 8,600 lb	5/8 in. 10,000 lb
41–50 ft	1/2 in. 7,900 lb	1/2 in. 7,900 lb	1/2 in. 8,600 lb	5/8 in. 10,000 lb
51–60 ft	5/8 in. 14,000 lb	5/8 in. 14,000 lb	5/8 in. 15,200 lb	3/4 in. 13,500 lb
61–75 ft	3/4 in. 19,400 lb	3/4 in. 18,500 lb	3/4 in. 18,800 lb	7/8 in. 19,000 lb
76–90 ft	3/4 in. 19,400 lb	7/8 in. 27,000 lb	7/8 in. 29,000 lb	1 in. 25,000 lb
91–100 ft		1 in. 33,900 lb	1 in. 36,000 lb	
101–120 ft		1 in. 33,900 lb	1 in. 36,000 lb	

Dock Line Lengths

Diameter INCHES	Gold-N-Braid FEET	Solid Color FEET	Super Strong FEET	Pro-Set-3 FEET
3/8 in.	15', 20', 25'	15', 20', 25'	15', 20', 25'	15', 20'
1/2 in.	15', 20', 25'	15', 20', 25', 30', 35'	15', 20', 25', 30', 35'	15', 20', 25', 30'
5/8 in.	25', 30', 35'	20', 25', 30', 35'		25', 30', 35', 40'
3/4 in.	40', 50'	40', 50'		

Elastic Elongation

Elongation	Gold-N-Braid	Solid Color	Super Strong	Pro-Set-3
10%	3.5%	3.5%	3.0%	5.5%
20%	5.6%	5.6%	5.3%	10.0%
30%	8.5%	8.5%	6.7%	12.1%

After 50 cycles at % of break strength.

DOUBLE BRAIDS



Gold-N-Braid

Product Code: 610



Solid Color Navy

Product Code: 618



Solid Color Blue

Product Code: 618



Solid Color Black

Product Code: 618



Super Strong

Product Code: 612

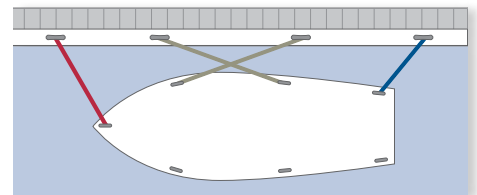
3-STRAND



Pro-Set-3

Product Code: 601

CUSTOM DOCK LINES



Formulas for calculating custom dock lines:

— Bow Lines = $1\text{-}1/2 \times \text{Beam}$

— Spring Lines = $3/4 \times \text{Length Over All}$

— Stern Lines = $1\text{-}1/2 \text{ to } 2 \times \text{Beam}$

Samson offers custom sizes and lengths of dock lines to suit specific mooring requirements. Consult your local Samson dealer for more information.

Anchor Lines

They're among the most critical lines on your boat

Samson anchor lines are shipped with a prespliced high-strength, reinforced captive thimble. Smaller diameters are shipped in convenient, reusable plastic tote boxes. Longer lengths on spools are available. Contact your local Samson dealer for more information.



DOUBLE BRAIDS



Product Code: 611

Gold-N-Braid



Product Code: 615

Super Strong

3-STRAND



Product Code: 603

Pro-Set-3



Samson anchor lines are shipped with a prespliced, high-strength, reinforced, black synthetic captive thimble.

Choices—because not all boats are the same

Available in double braid (Gold-N-Braid or Super Strong), or 3-strand twisted constructions (Pro-Set-3), Samson anchor lines provide excellent strength, energy absorption, and long service life.

Anchor Line Selection Guide

Strengths are approximate averages of new rope.

Boat Size	Gold-N-Braid	Super Strong	Pro-Set-3
15–25 ft	3/8 in. 4,500 lb	3/8 in. 4,900 lb	3/8 in. 3,600 lb
26–30 ft	3/8 in. 4,500 lb	3/8 in. 4,900 lb	1/2 in. 6,300 lb
31–35 ft	3/8 in. 4,500 lb	3/8 in. 4,900 lb	1/2 in. 6,300 lb
36–40 ft	1/2 in. 7,900 lb	1/2 in. 8,600 lb	5/8 in. 10,000 lb
41–50 ft	1/2 in. 7,900 lb	1/2 in. 8,600 lb	5/8 in. 10,000 lb
51–60 ft	5/8 in. 14,000 lb	5/8 in. 15,200 lb	3/4 in. 13,500 lb
61–75 ft	3/4 in. 19,400 lb	3/4 in. 18,800 lb	7/8 in. 19,000 lb
76–90 ft		7/8 in. 29,000 lb	1 in. 25,000 lb
91–100 ft		1 in. 36,000 lb	
101–120 ft		1 in. 36,000 lb	

Anchor Line Lengths

Diameter INCHES	Gold-N-Braid FEET	Super Strong FEET	Pro-Set-3 FEET
3/8 in.	100', 150', 200'	100', 150', 200'	100', 150'
1/2 in.	150', 200', 250'	100', 150', 200', 250', 300'	100', 150', 200', 300'
5/8 in.	200', 250'	150', 200', 250', 300'	150', 200', 250'

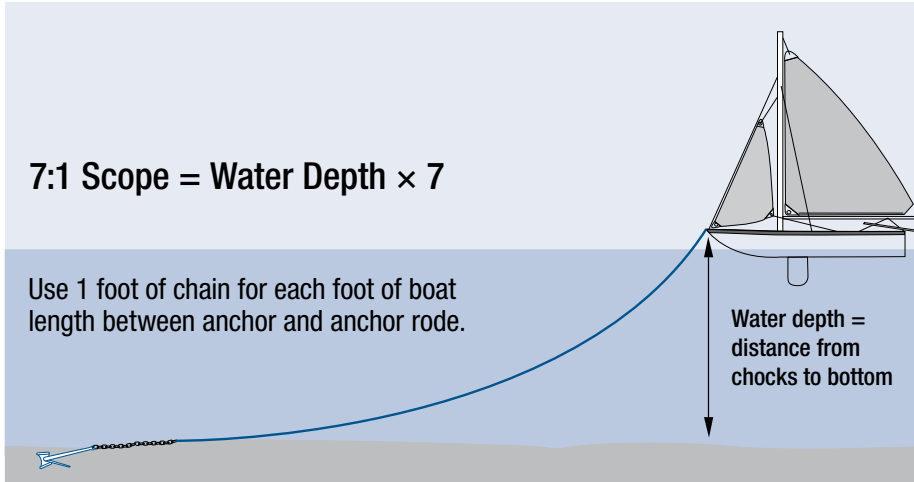
Elastic Elongation

Elongation	Gold-N-Braid	Super Strong	Pro-Set-3
10%	3.5%	3.0%	5.5%
20%	5.6%	5.3%	10.0%
30%	8.5%	6.7%	12.1%

After 50 cycles at % of break strength.

7:1 Scope = Water Depth × 7

Use 1 foot of chain for each foot of boat length between anchor and anchor rode.



Anchor Line Scope

The holding power of any anchor is dramatically increased when the proper scope of anchor line is used. There should be enough anchor rode on hand to provide a scope of 7:1 (seven times the water depth at the anchor) in all anticipated anchorages. This will provide enough security for all but the heaviest of seas.

Holding power can be further enhanced by using a section of chain between the rope and the anchor. The combination lowers the angle of pull, causing most modern anchors to bury-in, rather than drag.

Chafe Protection

Dock and anchor lines should be well protected from chafe caused by constant abrasion where lines contact chocks or the rail, which can cause the strongest lines to fail well before their normal useful lifespan. All contact points should be covered with canvas, leather, chafing tape, or even plastic tubing to prevent wear.

Consult with your local supplier to determine what chafe protection product(s) might be right for you.



Anchoring Securely

There are two methods to connect your anchor rode to the chain: a rope-to-chain splice or an eye splice with a thimble. The rope-to-chain splice allows the rope/chain interface to pass through most gypsies on anchor windlasses. Because this splice allows direct rope-to-chain contact, it should be inspected frequently for chafe and remade if necessary.

The alternative, an eye splice with a thimble connected to the chain with a moused shackle (see inset photo), prevents direct rope-to-chain chafing, but will not pass through the gypsies on most windlasses.

Instructions for double braid and 3-strand rope splices are available for free download on our website:

SamsonRope.com.



TECH TIPS: ANCHORING



Accessory Products

Lash-It! Product Code: 811

Class II

Lash-It! has been called “the sailor’s duct tape” because of its multiple uses on any sailboat. A single braid made from Dyneema® fiber with Samthane urethane coating, Lash-It! offers a high strength-to-weight ratio: it is stronger than steel, so light it floats, and does not absorb water. Lash-It! comes in 180’ easily dispensed from a plastic tube.



SPECIFICATIONS

Available in 180 ft. tubes and 600 ft. spools.

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/16 in.	1.75 mm	500 lb	0.12 lb
3/32 in.	2.20 mm	650 lb	0.16 lb

Quik-Splice Product Code: 335

APPLICATIONS: Floating Mooring Lines | Dinghy Painters | House Boat Tie-up Lines

Quik-Splice is a fast-splicing single braid constructed with high-strength Ultra Blue copolymer olefin fiber. It floats and has high wet and dry abrasion resistance. The Ultra Blue fiber has excellent dielectric properties and is extruded with our SL-5 ultraviolet inhibitor to provide superior resistance to sunlight degradation. *Sizes 7/16" and smaller change from 12-strand to 8-strand construction.*

Quik-Splice is blue with a green and red ID.

FEATURES

- > UV stabilized
- > Easy to splice
- > Water resistant
- > Abrasion resistant, especially in wet environments
- > 30–35% stronger than standard polypropylene



SPECIFICATIONS Available in 500 ft. spools

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	1,400 lb	1.1 lb
5/16 in.	8 mm	2,500 lb	1.7 lb
3/8 in.	9 mm	3,500 lb	2.7 lb
7/16 in.	11 mm	4,600 lb	3.5 lb
1/2 in.	12 mm	6,700 lb	4.7 lb
9/16 in.	14 mm	7,500 lb	6.0 lb
5/8 in.	16 mm	10,900 lb	7.8 lb

ELASTIC ELONGATION:

10%	20%	30%
1.1%	1.9%	2.6%

After 50 cycles at % of break strength.

MFP Floatline Product Code: 461

APPLICATIONS: Floating Mooring Lines | Dinghy Painters

Double braid with a multifilament polypropylene cover and floating core. MFP Floatline is yellow with red ID.

SPECIFICATIONS Available in 600 ft. spools

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	1,700 lb	1.4 lb
3/8 in.	9 mm	3,200 lb	2.7 lb
1/2 in.	12 mm	5,200 lb	4.5 lb
5/8 in.	16 mm	7,400 lb	8.0 lb

Standard Pack: 1 spool per case.



HB Poly Product Code: 307

HB Poly is made with a UV-stabilized monofilament polypropylene fiber. It's easy to splice and it floats. HB Poly is green.



SPECIFICATIONS

Available in 100 ft. Hanks and 600 ft. spools

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
3/16 in.	5 mm	750 lb	0.60 lb
1/4 in.	6 mm	1,200 lb	1.1 lb
5/16 in.	8 mm	1,700 lb	1.6 lb
3/8 in.	9 mm	2,600 lb	2.3 lb
1/2 in.	12 mm	4,300 lb	3.7 lb

Standard Pack: 12 connected hanks or 1 spool per case.

Accessory Cord Product Code: 480

With a polyester cover and nylon core, Samson's Accessory Cord has excellent flexibility, knotting, and strength characteristics for a smooth running, torque-free cord.

Accessory Cord is black.



FEATURES

- > Excellent flexibility
- > Excellent knot-holding capability
- > Smooth running through hardware

SPECIFICATIONS Available in 300 ft. spools

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
5/64 in.	2 mm	230 lb	0.20 lb
1/8 in.	3 mm	600 lb	0.50 lb
5/32 in.	4 mm	1,000 lb	0.80 lb
3/16 in.	5 mm	1,200 lb	1.4 lb
1/4 in.	6 mm	2,200 lb	1.8 lb
9/32 in.	7 mm	2,800 lb	2.3 lb
5/16 in.	8 mm	3,500 lb	3.0 lb
3/8 in.	9 mm	4,300 lb	3.8 lb

Standard Pack: 1 spool per case.

Tie-It Braid Product Code: 479

Constructed of white braided polypropylene cover with a knot-holding control core. Tie-It Braid is white.



SPECIFICATIONS

Size No.	Size Diameter INCHES	Size Diameter MILLIMETER	Put-Up FEET	Strength Average POUNDS	Weight Per 100 ft. POUNDS
6	3/16 in.	5 mm	100', 1000'	500 lb	0.63 lb
8	1/4 in.	6 mm	100', 1000'	1,300 lb	1.10 lb

100' lengths packaged in hanks, 1000' lengths packaged in spools.

Standard Pack: 12 connected hanks or 1 spool per case.

Accessory Products

Solid Braid Polyester Product Code: 020

With a firm round construction, Solid Braid Polyester resists rot and mildew. It stays flexible and has shock absorbing ability. Solid Braid Polyester is white.



SPECIFICATIONS

Size No.	Size Diameter INCHES	Size Diameter MILLIMETER	Put-Up FEET	Strength Average POUNDS	Weight Per 100 ft. POUNDS
4	1/8 in.	3 mm	50', 1000'	310 lb	0.43 lb
6	3/16 in.	5 mm	50', 1000'	620 lb	0.92 lb
8	1/4 in.	6 mm	100', 1000'	1,100 lb	1.5 lb
10	5/16 in.	8 mm	1000'	1,600 lb	2.9 lb
12	3/8 in.	9 mm	1000'	2,200 lb	3.9 lb
16	1/2 in.	12 mm	1000'	3,700 lb	6.4 lb

50' and 100' lengths packaged in hanks, all other lengths packaged in spools.
Standard Pack: 12 connected hanks or 1 spool per case.

Solid Braid Nylon Product Code: 019

Solid Braid Nylon has a firm, round construction that resists rot and mildew. It stays flexible and has shock-absorbing ability. Solid Braid Nylon is white.



SPECIFICATIONS

Size No.	Size Diameter INCHES	Size Diameter MILLIMETER	Put-Up FEET	Strength Average POUNDS	Weight Per 100 ft. POUNDS
4	1/8 in.	3 mm	500'	400 lb	0.37 lb
6	3/16 in.	5 mm	500'	800 lb	0.75 lb
8	1/4 in.	6 mm	100', 500', 1000'	1,300 lb	1.2 lb
10	5/16 in.	8 mm	100', 500', 1000'	1,400 lb	2.1 lb
12	3/8 in.	9 mm	500'	2,500 lb	3.0 lb
16	1/2 in.	12 mm	500'	4,000 lb	5.1 lb

50' and 100' lengths packaged in hanks, all other lengths packaged in spools.

Splicing Manual & Instructional DVDs



SPLICING MANUAL: Written instructions accompany detailed illustrations for every splice technique covered in the book.

Product Code: 996-0061

SPLICING INSTRUCTION DVDS:
A selection of our splice instructions in live action video.

Product Code: 996-0090



Splicing Tools & Kits

The **Samson Splice Training Kit** comes complete with a fid, pusher, instructions for a double braid eye splice, and two lengths of double braided ropes.

Product Code: 999-0010



The **Samson Splicing Kit** comes with splicing instructions for a double braid eye splice, a pusher, and 5 aluminum tubular fids (size range 1/4" through 1/2" diameter).

Product Code: 999-0070



Selma Fids

Made from highly polished stainless steel, Selma Fids are patented worldwide. Available in sets only, the Selma Fid may be used to splice hollow braided lines from 1/8" to 9/16", or double braid and 3-strand rope up to 1-1/8".

Product Code: 903

SPECIFICATIONS

Tubular Fid Diameter INCHES	Put-Up	Pack POUNDS	Units PER PACK
1/4 in.	1 each	0.60 lb	12
5/16 in.	1 each	1.2 lb	12
3/8 in.	1 each	1.8 lb	12
7/16 in.	1 each	2.4 lb	12
1/2 in.	1 each	2.4 lb	12
9/16 in.	1 each	3.0 lb	6
5/8 in.	1 each	3.0 lb	6
3/4 in.	1 each	6.0 lb	6
7/8 in.	1 each	9.0 lb	6
1 in.	1 each	12.0 lb	6

Small Pusher	1 each	2.4 lb	12
Large Pusher	1 each	2.4 lb	6
Selma Fids	set of 5	0.50 lb	1
Splice Training Kit	1 each	12.0 lb	6
Splicing Kit	1 each	9.6 lb	12

ROPE SELECTION Select the Right Rope for the Job

The use of rope for any purpose subjects it to friction, bending, and tension. All rope hardware, sheaves, rollers, capstans, cleats, and 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 ideal conditions, it will lose strength during use in any application. Maximizing safety and rope performance begins with selecting the right rope, managing its strength loss through optimal handling practices, and retiring it from service before it creates a dangerous situation. Ropes are serious working tools, and when used properly they will give consistent and reliable service. The cost of replacing a rope is extremely small when compared to the physical damage or injury to personnel a worn out rope can cause.

Selecting a rope involves evaluating a combination of factors. Some of these factors are straightforward like comparing rope specifications. Others are not easily quantified, such as a preference for a specific color or how a rope feels in your hand. Cutting corners, reducing application factors that pertain to sizes or strengths on an initial purchase creates unnecessary frequent replacements and potentially dangerous conditions, in addition to increasing long-term costs. For fiber and construction that are equal, a larger rope will outlast a smaller rope because of the greater surface wear distribution. Similarly, a stronger rope will outlast a weaker one because it will be used at a lower percentage of its break strength with a reduced chance of it being overstressed.

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 will have to work harder and as a result will have to be retired sooner.

Our published strengths and test results reflect as accurately as possible the conditions under which they are to be used. Because all ropes are terminated with a splice, all published strengths herein are spliced strengths. This is so the customer can select the appropriate size and strength of the rope for the application, and to ensure the utmost in safety and length of service life. When comparing our data to that of other rope manufacturers, please be sure that spliced strengths are used.

ELONGATION

It is well accepted that ropes with lower elongation under load will give you better load control. 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. Both twisted and braided ropes are suitable for rigging. Twisted rope has lower strength and more stretch. Braided rope has higher strength and lower stretch.

SHOCK LOADING

Working loads as described herein are not applicable when rope has been subjected to shock loading. Whenever a load is picked up, stopped, moved, or swung there is an increased force caused by the dynamic nature of the movement. The force increases as these actions occur more rapidly or suddenly, which is known as "shock loading." Synthetic fibers have a memory and retain the effects of being overloaded or shock loaded. A rope that has undergone shock loading can fail at a

later time even though it is loaded within the working load range.

Examples of applications where shock loading occurs include ropes used as a tow line, picking up a load on a slack line, or using rope to stop a falling object. In extreme cases, the force put on the rope may be two, three, or more times the normal load involved. Shock loading 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.

For example, the shock load on a winch line that occurs when a 5,000 lb object is lifted vertically with a sudden jerk may "weigh" 30,000 lbs under the dynamic force. If the winch line is rated in the 30,000 lb break strength range, it is very likely to break.

Where shock loads, sustained loads, or where life, limb, or valuable property is involved, it is recommended that an increased working load factor be used.

It is recommended that a lower working load factor be selected with only 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 shock loads, excessive use, elevated temperatures, or extended periods under load.

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

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.

CONSTRUCTION AND ABRASION

It is important to choose the right rope construction for your application because it affects resistance to normal wear and abrasion. Braided ropes have a round, smooth construction that tends to flatten out somewhat on a bearing surface. This distributes the wear over a much greater area, as opposed to the crowns of a 3-strand or, to a lesser degree, an 8-strand rope.

WORKING LOADS

Working loads are the loads that a rope is subjected to in everyday activity. 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 breaking strength of new and unused rope of current manufacture.

Working load factors vary in accordance with the different safety practices and policies of each user. However, when used under normal conditions, our general recommendation that is fairly well accepted in the industry, is a minimum 5:1 working load factor. Thus, your maximum workload should be approximately 1/5th, or 20%, of the quoted breaking strength. This factor provides greater safety and extends the service life of the winch line.

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 pickups), excessive use, elevated temperatures, or extended periods under load.

Assume that you have seven identical ropes, each with a 30,000 lb breaking strength and you work these ropes daily with each rope lifting a different load, as shown in Table 1.

Table 1 shows that the higher the working load factor, the greater the service life and the lower the replacement factor. Therefore, the working load factor directly reflects the economy of the purchase.

TABLE 1. WORKING LOADS FOR SEVEN ROPES WITH BREAKING STRENGTHS OF 30,000 LB.

	Breaking Strength	Working Load*	Working Load Factor	Number of Lifts
1	30,000 lb	5,000 lb	6:1	1,000
2	30,000 lb	6,000 lb	5:1	750
3	30,000 lb	7,500 lb	4:1	500
4	30,000 lb	10,000 lb	3:1	300
5	30,000 lb	15,000 lb	2:1	100
6	30,000 lb	20,000 lb	1.5:1	25
7	30,000 lb	27,300 lb	1.1:1	5

**Relative values only. The higher the working load factor the greater the service life, and, of course, the lower the replacement factor. Thus, a working load factor also directly reflects an economy factor; if you always lift the same weight, then the stronger the rope, the higher the working load factor, and the longer the rope will last.*

IMPORTANT NOTE: It is important to note that many industries are subject to state and federal regulation on work load limits that supercede the manufacturer's recommendation. It is the responsibility of the rope user to be aware of and adhere to those laws and regulations.

ROPE CLASS

All Samson ropes are categorized for splicing and testing purposes as a Class I or Class II construction.

Class I ropes are produced with non high-modulus fibers that impart the strength and stretch characteristics to the rope, which have tenacities of 15 grams/denier (gpd) or less and a total stretch at break of 6% or greater. Class I ropes are produced with traditional fibers such as olefins (polypropylene or polyethylene), nylon, or polyester.

Class II ropes are produced with high-modulus fibers that impart the strength and stretch characteristics to the rope which have tenacities greater than 15 grams/denier (gpd) and a total stretch at break of less than 6%. Typical Class II ropes are produced with HMPE (Dyneema®), HMPP (Innegra™S), aramid (Technora®), LCP (Vectran®), or PBO (Zylon®).

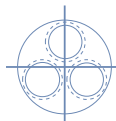
Both Class I and Class II ropes can be produced in various rope constructions such as 3-strand, 8-strand, 8x3-strand, 12-strand, double braids, or core-dependent braids.

Rope Construction

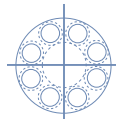
All sizes stated are nominal diameters and do not reflect exact imensions. Weights depicted are average net rope weights relaxed and standard tolerances are ± 5% unless agreed to in writing.

All Samson ropes are categorized for testing purposes as Class I or Class II ropes. Class I ropes are manufactured from polyolefin, nylon and/or polyester fiber. Class II ropes are manufactured from high-modulus fiber (i.e., Dyneema®, Zylon®, Technora®, Vectran®).

3-Strand



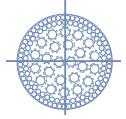
8-Strand



12-Strand

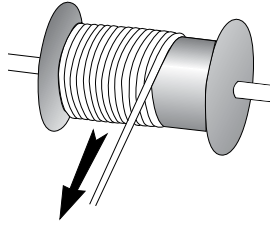


Double Braid



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 counterclockwise direction.



Synthetic-fiber rope should be removed from the reel by pulling it off the top while the reel is free to rotate.

AVOID KINKING AND HOCKLING

The continuous use of a line on one side of a winch or windlass is a common abuse that can render a line useless in a comparatively short time. Repeated hauling of a line over a winch in a counterclockwise direction (or in the opposite direction of the lay of the rope) will extend the lay of the rope and simultaneously shorten the twist of each strand. As this action continues, hockles (or kinks) 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 the rope becomes stiff and readily kinks.

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.

MINIMIZE TWIST IN THE LINE

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” the rope when it is relaxed.

In braided ropes, as little twist as four turns per three feet (or per meter) introduced into the line can cause as much as 10 to 30% reduction of strength. Another way to help prevent twist is to preset the line. Once these ropes have been loaded, they do not return to their original dimensions. A rope that has been preset is less likely to accept permanent twist. Presetting should be performed only on new and unused rope, and with extreme caution. For lines in use that have not been preset, alternate wrap directions on the bitt to minimize twist each time the line is used.

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.

TEMPERATURE

AVOID OVERHEATING

Heat can seriously affect the strength of synthetic ropes. When using rope where the temperature exceeds 250° (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 the slippage causes localized overheating, which can melt or fuse synthetic fibers, resulting in severe loss of tensile strength.

Friction can be your best friend or worst enemy if it is not managed properly. Friction takes place anytime two surfaces come in contact. Mild friction, sometimes referred to as grip, is a good characteristic, especially in winching applications. However, 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.

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

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

Be aware of areas of heat buildup and take steps to minimize them. 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 often 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.

TABLE 2. THE CRITICAL AND MELTING TEMPERATURES FOR SYNTHETIC FIBERS.

FIBER TYPE	CRITICAL TEMP.	MELTING TEMP.
HMPE	150° F	300° F
Polypropylene	250° F	330° F
Nylon	325° F	425° F
Polyester	350° F	480° F
Aramid	520° F	930° F*

**While the term “melting” does not apply to this fiber, it does undergo extreme degradation in these temperatures, and they char.*

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 approximately 50% of their strength. However, this number can be higher or lower based on rope construction and fibers used. It is vital that the reduction in strength by the use of knots be taken into account when determining the 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 the manufacturer's 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: COILING, FLAKING, AND BAGGING

Great care must be taken in the stowage and proper coiling of 3-strand ropes to prevent the natural built-in twist of the line from developing kinks and 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.

3-strand and braided 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 flake out the line in a figure eight. This avoids putting twist in the line in either direction and lessens the risk of kinking.

Bagging is the most common method of storing braided or twisted lines. The rope is allowed to fall into its natural position without deliberate direction.



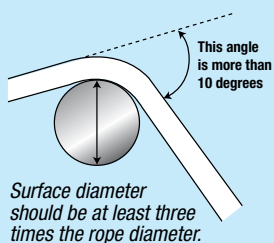
Figure Eight Flaking

Coiling — Twisted Ropes

STORAGE

All rope should be stored in a clean, dry area, out of direct sunlight, and away from extreme heat. It should be kept off the floor and on racks to provide ventilation underneath. Never store rope 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 and 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.

Bending Radius **Sizing the Radius of Bitts, Fairleads, and Chocks**



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 bitts, fairleads and chocks for best performance, the following guidelines are offered:

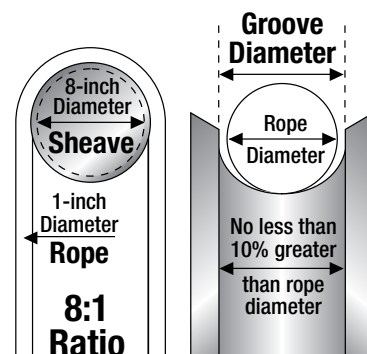
Where a rope bends more than 10 degrees around bitts or chocks, or is bending across any surface, the diameter of that surface should not be less than 3 times the diameter of the rope. Stated another way, the diameter of the surface should be at least 3 times the rope diameter. A 4:1 ratio (or larger) 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).

The ratio of the length of an eye splice to the diameter of the object over which the eye is to be placed (for example, bollard, bitt, cleat, etc.) should be a minimum 3:1 relationship and preferably 5:1. In other words, if you have a bollard 2 feet in diameter the eye splice should be 6 or 10 feet in length. By using this ratio the angle of the 2 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 3:1 ratio).

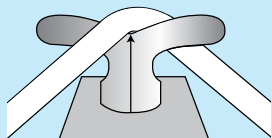
BOOM-SHEAVE RECOMMENDATIONS

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 10% 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.

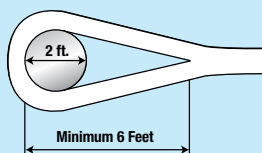


Twisted / Plaited:
10 times rope diameter

Braided:
8 times rope diameter

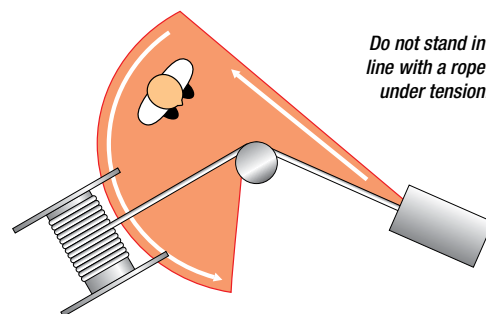


Bollards with undersized horns.



DANGER 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 and speed. In all cases where any such risks are present, or where there is any question about the load involved or the condition of use, the working load should be substantially reduced and the rope properly inspected before every use.



Elongation (Stretch)

ELASTIC ELONGATION (EE)

Elastic elongation refers to the portion of stretch or extension of a rope that is immediately recoverable after the load on the rope is released. The rope's tendency to recover is a result of the fiber(s) rather than the rope construction. Each type of synthetic fiber inherently displays a unique degree of elasticity. Relatively speaking, high-performance fiber has extremely low elasticity as compared to nylon fiber.

ELASTIC HYSTERESIS

Elastic 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 portion that occurs immediately when a load is removed. However, a remaining small percentage of elastic recovery occurs gradually over a period of hours or days. Elastic hysteresis is measured in a length/time scale.

PERMANENT EXTENSION (PE) AFTER RELAXATION

Permanent extension after relaxation refers to the portion of extension that prevents the rope from returning to its original length due to construction deformation, such as compacting of braid and helical changes, and some plastic deformation of the yarn fibers.

PE WHILE WORKING

Permanent extension while working is the amount of extension that exists when stress is removed but no time is given for hysteretic recovery. It includes the nonrecoverable and hysteretic 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 PE over the working load range is generally in order of 4–6% for braided ropes and two to three times as much for plaited. However, it varies slightly with different fibers and rope constructions. In some applications, such as subsurface mooring or devices that demand precise depth location and measurement, allowances must be made for this factor.

CREEP

A material's slow deformation that occurs while under load over a long period of time. Creep is mostly nonreversible. For some synthetic ropes, permanent elongation and creep are mistaken for the same property and used interchangeably when in fact creep is only one of the mechanisms that can cause permanent elongation.

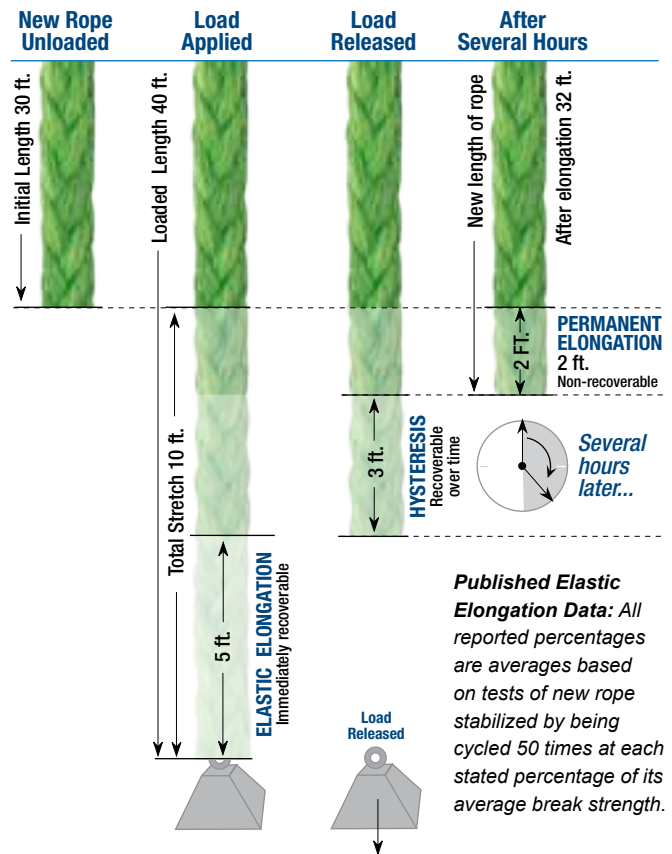
CONSTRUCTIONAL ELONGATION

The elongation of a loaded rope that results from compaction as the fibers and strands align and adjust.

SPLICE SETTING

The elongation of a spliced rope caused by the adjustment and settling of the strands in the splice.

Components of Stretch on a Loaded Rope



Published Elastic Elongation Data: All reported percentages are averages based on tests of new rope stabilized by being cycled 50 times at each stated percentage of its average break strength.

Comparison of Fiber Characteristics

GENERIC FIBER TYPE	NYLON	POLYESTER	POLYPROPYLENE	HMPE	LCP	ARAMID	PBO
Tenacity (g/den) ¹	7.5 – 10.5	7 – 10	6.5	40 (SK-75)	23 – 26	28	42
Elongation ²	15 – 28%	12 – 18%	18 – 22%	3.6%	3.3%	4.6%	2.5%
Coefficient of Friction ³	.12 – .15	.12 – .15	.15 – .22	.05 – .07	.12 – .15	.12 – .15	.18
Melting Point	425°– 490° F	480°– 500° F	330° F	300° F	625° F	930° F*	1200° F*
Critical Temperature ⁴	325° F	350° F	250° F	150° F	300° F	520° F	750° F
Specific Gravity	1.14	1.38	.91	.98	1.40	1.39	1.56
Creep ⁵	Negligible	Negligible	Application Dependent	Application Dependent	Negligible	Negligible	Negligible

* Char temperature – does not melt

¹ **TENACITY** is the measurement of the resistance of fiber to breaking.

² **ELONGATION** refers to percent of fiber elongation at break.

³ **COEFFICIENT OF FRICTION** is based on the rope's resistance to slipping.

⁴ **CRITICAL TEMPERATURE** is defined as the point at which degradation is caused by temperature alone.

⁵ **CREEP** is defined as a material's slow deformation that occurs while under load over a long period of time. Creep is mostly nonreversible. For some synthetic ropes, permanent elongation and creep are mistaken for the same property and used interchangeably when in fact creep is only one of the mechanisms that can cause permanent elongation.

FIBER STRENGTH RETENTION AFTER CHEMICAL IMMERSION

(HMPE strength retention after 6-months immersion)

AGENT	HMPE
Sea Water	100%
Hydraulic Fluid	100%
Kerosene	100%
Gasoline	100%
Glacial Acetic Acid	100%
1 M Hydrochloric Acid	100%
5 M Sodium Hydroxide	100%
Ammonium Hydroxide (29%)	100%
Hypophosphite Solution (5%)	100%
Perchloroethylene	100%
10% Detergent Solution	100%
Bleach	91%

One frequently asked question 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 are there 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 abrasion, glossy or glazed areas, inconsistent diameter, discoloration, and inconsistencies in texture and stiffness.

VISUAL INSPECTION

The load-bearing capacity of double braid ropes, such as Stable Braid, is divided equally between the inner core and the outer cover. If upon inspection, there are cut strands or significant abrasion damage the rope must be retired because the strength of the entire rope is decreased.

Core-dependent double braids such as Ultra-Tech have 100% of their load-bearing capacity handled by the core alone. For these ropes, the jacket can sustain damage without compromising the strength of the load-bearing core. Inspection of core-dependent double braids can be misleading because it is difficult to see the core. In the case of 12-strand single braids such as AmSteel® and AmSteel®-Blue, each of the 12-strands carries approximately 8.33%, or 1/12th, of the load. If upon inspection, there are cut strands or significant abrasion damage to the rope, the rope must be retired or the areas of damage removed and the rope repaired with the appropriate splice.

ABRASION

When a 12-strand single braid rope, such as AmSteel®-Blue, is first put into service, the outer filaments of the rope will quickly fuzz up. This is the result of these filaments breaking, which 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. When inspecting the rope, 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.

As a general rule for braided ropes, when there is 25% or more wear from abrasion, or the fiber is broken or worn away, the rope should be retired from service. For double braid ropes, 50% wear on the cover is the retirement point, and with 3-strand ropes, 10% or more wear is accepted as the retirement point.

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.

DISCOLORATION

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

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.

INCONSISTENT TEXTURE

Inconsistent texture or stiff areas can indicate excessive dirt or grit embedded in the rope or shock load damage and is usually reason to replace the rope.

RESIDUAL STRENGTH

Samson offers customers residual strength testing of our ropes. Periodic testing of samples taken from ropes currently in service ensures that retirement criteria are updated to reflect the actual conditions of service.



New rope.



Used rope.



Severely abraded rope.



Inspect for pulled strands.



Inspect for internal abrasion.



Compare surface yarns with internal yarns.



Compressed areas.

Rope Retirement

SINGLE BRAID Rope Inspection & Retirement Checklist

Single Braids

Inspection and Retirement Checklist*

Any rope that has been in use for any period of time will show normal wear and tear. Some characteristics of a used rope will not reduce strength while others will. Below we have defined normal conditions that should be inspected on a regular basis.

If upon inspection you find any of these conditions, you must consider the following before deciding to repair or retire it:

- > the length of the rope,
- > the time it has been in service,
- > the type of work it does,
- > where the damage is, and
- > the extent of the damage.

In general, it is recommended to:

- > Repair the rope if the observed damage is in localized areas.
- > Retire the rope if the damage is over extended areas.

*REFERENCES Cordage Institute International, *International Guideline CI2001-04, Fiber-Rope Inspection and Retirement Criteria: Guidelines to Enhance Durability and the Safer Use of Rope*, 2004.

COMPRESSION *Not a permanent characteristic*



- WHAT**
- > Visible sheen
 - > Stiffness reduced by flexing the rope
 - > Not to be confused with melting
 - > Often seen on winch drums
- CAUSE**
- > Fiber molding itself to the contact surface under a radial load
- CORRECTIVE ACTION**
- Flex the rope to remove compression.

PULLED STRAND *Not a permanent characteristic*



- WHAT**
- > Strand pulled away from the rest of the rope
 - > Is not cut or otherwise damaged
- CAUSE**
- > Snagging on equipment or surfaces
- CORRECTIVE ACTION**
- Work back into the rope.

ABRASION *Repair or retire*



- WHAT**
- > 25% reduction
- CAUSE**
- > Abrasion
 - > Sharp edges and surfaces
 - > Cyclic tension wear
- CORRECTIVE ACTION**
- If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

MELTED OR GLAZED FIBER *Repair or retire*



- WHAT**
- > Fused fibers
 - > Visibly charred and melted fibers, yarns, and/or strands
 - > Extreme stiffness
 - > Unchanged by flexing
- CAUSE**
- > Exposure to excessive heat, shock load, or a sustained high load
- CORRECTIVE ACTION**
- If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

DISCOLORATION/DEGRADATION *Repair or retire*



- WHAT**
- > Fused fibers
 - > Brittle fibers
 - > Stiffness
- CAUSE**
- > Chemical contamination
- CORRECTIVE ACTION**
- If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

INCONSISTENT DIAMETER *Repair or retire*



- WHAT**
- > Flat areas
 - > Lumps and bumps
- CAUSE**
- > Shock loading
 - > Broken internal strands
- CORRECTIVE ACTION**
- If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

ABRASION INSPECTION PROCEDURES



To determine the extent of outer fiber damage from abrasion, a single yarn in all abraded areas should be examined. The diameter of the abraded yarn should then be compared to a portion of the same yarn or an adjacent yarn of the same type that has been protected by the strand crossover area and is free from abrasion damage. (LEFT)

Internal abrasion can be determined by pulling one strand away from the others and looking for powdered or broken fiber filaments. (ABOVE)

Inspection and Retirement Checklist*

Any rope that has been in use for any period of time will show normal wear and tear. Some characteristics of a used rope will not reduce strength while others will. Below we have defined normal conditions that should be inspected on a regular basis.

If upon inspection you find any of these conditions, you must consider the following before deciding to repair or retire it:

- > the length of the rope,
- > the time it has been in service,
- > the type of work it does,
- > where the damage is, and
- > the extent of the damage.

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*REFERENCES Cordage Institute International, *International Guideline CI2001-04, Fiber-Rope Inspection and Retirement Criteria: Guidelines to Enhance Durability and the Safer Use of Rope*, 2004.

DOUBLE BRAID vs. CORE-DEPENDENT

Double braid ropes consist of a cover or jacket braided over a separately braided core. Samson produces two types of double braided ropes: standard double braids and core-dependent double braids.

The strength of standard double braid ropes is shared between the cover and the core. Damage to the cover also usually affects the core and ultimately the strength of the rope.

In core-dependent double braids, the core is the strength member and carries the entire load. Damage to the cover of a core-dependent double braid may not compromise strength of the rope.

Inspection of both standard double braids and core-dependent double braids is essential to determining whether the rope can be repaired or if it needs to be retired.

CUT STRANDS DOUBLE BRAID: Repair or retire CORE-DEPENDENT: May not affect strength



- WHAT** > Three or more adjacent cut strands
- CAUSE** > Abrasion
> Sharp edges and surfaces
> Cyclic tension wear

REDUCED VOLUME DOUBLE BRAID: Repair or retire CORE-DEPENDENT: May not affect strength



- WHAT** > 50% volume reduction
- CAUSE** > Abrasion
> Sharp edges and surfaces
> Cyclic tension wear

MELTED OR GLAZED FIBER Repair or retire



- WHAT** > Fused fibers
> Visibly charred and melted fibers, yarns, and/or strands
> Extreme stiffness
> Unchanged by flexing
- CAUSE** > Exposure to excessive heat, shock load, or a sustained high load

DISCOLORATION/DEGRADATION Repair or retire



- WHAT** > Fused fibers
> Brittle fibers
> Stiffness
- CAUSE** > Chemical contamination

INCONSISTENT DIAMETER Repair or retire



- WHAT** > Flat areas
> Lumps and bumps
- CAUSE** > Shock loading
> Broken internal strands

HALYARD SELECTION (For Main, Jib/Genoa, & Spinnaker Halyards)

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" XLS	1/4" XLS	1/8" Tech-12, 1/4" MLX, XLS Extra, WarpSpeed®
20'	1/4" XLS	1/4" MLX, XLS, XLS Extra, WarpSpeed®	3/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 1/4" WarpSpeed®, Validator II, Ultra-Tech, AmSteel®, Validator SKB
25'	5/16" XLS	5/16" MLX, XLS, XLS Extra, 1/4" WarpSpeed®	3/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 1/4" WarpSpeed®, Validator II, Ultra-Tech, AmSteel®, Validator SKB
30'	3/8" XLS	3/8" MLX, XLS, XLS Extra, 5/16" WarpSpeed®	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 5/16" WarpSpeed®, Validator II, Ultra-Tech, AmSteel®, Validator SKB
35'	7/16" XLS	7/16" MLX, XLS, XLS Extra, 3/8" WarpSpeed®	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 5/16" Ultra-Tech, Validator SKB, 5/16" WarpSpeed®, Validator II
40'	1/2" XLS	1/2" MLX, XLS, XLS Extra, 3/8" WarpSpeed®	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 5/16" Validator SKB, AmSteel®, 5/16" WarpSpeed®, Validator II, Ultra-Tech
45'	1/2" XLS	5/8" XLS, 7/16" WarpSpeed® 1/2" MLX, XLS Extra	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78 5/16" Ultra-Tech, Validator SKB, AmSteel®, 3/8" WarpSpeed®, Validator II
50'	5/8" XLS	5/8" XLS, 7/16" WarpSpeed® 1/2" MLX, XLS Extra	5/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-90, AS-78, 3/8" AmSteel®, Validator SKB, 7/16" WarpSpeed®, Validator II, Ultra-Tech

NOTE: The high tech racer may wish to break down the halyards more specifically and in the same diameters as follows: **Main:** Validator-12, Ultra-Tech **Spinnaker:** WarpSpeed®, XLS Extra **Jib:** WarpSpeed®, Validator SKB, Validator-12

MAINSHEETS SELECTION (End of Boom Sheeting)

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX™, LS, Trophy, XLS	1/4" Control-DPX™, MLX, XLS, XLS Extra, Ultra-Lite	3/16" Ultra-Tech, Validator II, 1/4" Control-DPX™, WarpSpeed®
20'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" Control-DPX™, MLX, XLS, XLS Extra, Ultra-Lite	5/16" Control-DPX™, 1/4" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
25'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" Control-DPX™, MLX, XLS, XLS Extra, Ultra-Lite	5/16" Control-DPX™, 1/4" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
30'	5/16" Control-DPX™, 3/8" LS, Trophy, XLS	5/16" Control-DPX™, 3/8" MLX, XLS, XLS Extra	5/16" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
35'	5/16" Control-DPX™, 7/16" LS, Trophy, XLS	5/16" Control-DPX™, 7/16" MLX, XLS, XLS Extra	5/16" Control-DPX™, 3/8" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
40'	7/16" Control-DPX™, 1/2" LS, Trophy, XLS	7/16" Control-DPX™, 1/2" MLX, XLS, XLS Extra	5/16" Control-DPX™, 3/8" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
45'	7/16" Control-DPX™, 1/2" LS, Trophy, XLS	7/16" Control-DPX™, 5/8" XLS, 1/2" MLX, XLS Extra	7/16" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
50'	1/2" Control-DPX™, 5/8" LS, Trophy, XLS	1/2" Control-DPX™, 5/8" XLS, 1/2" MLX, XLS Extra	1/2" Control-DPX™, 7/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®

SPINNAKER SHEETS SELECTION

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX™, LS, Trophy, XLS	1/4" Control-DPX™, MLX, Ultra-Lite, XLS Extra	1/4" Control-DPX™, Ultra-Lite, Ultra-Tech, Validator SKB, WarpSpeed®
20'	1/4" Control-DPX™, LS, Trophy, XLS	1/4" Control-DPX™, MLX, Ultra-Lite, XLS Extra	1/4" Control-DPX™, Ultra-Lite, Ultra-Tech, Validator SKB, WarpSpeed®
25'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" Control-DPX™, MLX, Ultra-Lite, XLS Extra	5/16" Control-DPX™, Ultra-Lite, 1/4" Ultra-Tech, Validator SKB, WarpSpeed®
30'	3/8" Control-DPX™, LS, Trophy, XLS	3/8" Control-DPX™, MLX, Ultra-Lite, XLS Extra	3/8" Control-DPX™, Ultra-Lite, 5/16" Ultra-Tech, Validator SKB, WarpSpeed®
35'	7/16" Control-DPX™, LS, Trophy, XLS	7/16" Control-DPX™, 3/8" MLX, Ultra-Lite, XLS Extra	3/8" Ultra-Lite, 5/16" Ultra-Tech, Validator SKB, WarpSpeed®, 7/16" Control-DPX™
40'	7/16" Control-DPX™, 1/2" LS, Trophy, XLS	7/16" Control-DPX™, XLS Extra, 1/2" MLX, XLS	7/16" Control-DPX™, MLX, XLS Extra, 3/8" Ultra-Tech, Validator SKB, WarpSpeed®
45'	1/2" Control-DPX™, LS, XLS	7/16" XLS Extra, 1/2" Control-DPX™, MLX, XLS	3/8" Ultra-Tech, Validator SKB, WarpSpeed®, 1/2" Control-DPX™, MLX, XLS Extra
50'	1/2" Control-DPX™, 5/8" LS, XLS	1/2" Control-DPX™, MLX, XLS, XLS Extra	7/16" Ultra-Tech, Validator SKB, WarpSpeed®, 1/2" Control-DPX™, MLX, XLS Extra

JIB/GENOA SHEET SELECTION

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX™, LS, Trophy	1/4" Control-DPX™, XLS	1/4" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
20'	1/4" Control-DPX™, LS, Trophy	1/4" Control-DPX™, XLS	1/4" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
25'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" Control-DPX™, MLX, XLS, XLS Extra	5/16" Control-DPX™, 1/4" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
30'	3/8" Control-DPX™, LS, Trophy, XLS	3/8" Control-DPX™, MLX, XLS, XLS Extra	1/4" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 3/8" Control-DPX™
35'	7/16" Control-DPX™, LS, Trophy, XLS	7/16" Control-DPX™, MLX, XLS, XLS Extra	5/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 7/16" Control-DPX™
40'	1/2" Control-DPX™, LS, Trophy, XLS	1/2" Control-DPX™, MLX, XLS, XLS Extra	3/8" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™
45'	1/2" Control-DPX™, LS, XLS	1/2" Control-DPX™, MLX, XLS Extra, 5/8" XLS	3/8" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™
50'	1/2" Control-DPX™, LS, XLS	1/2" Control-DPX™, MLX, XLS Extra, 5/8" XLS	7/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™

SPINNAKER GUY SELECTION

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	N/A	1/4" Control-DPX™, XLS	1/4" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
20'	N/A	1/4" Control-DPX™, XLS	1/4" Control-DPX™, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
25'	N/A	5/16" Control-DPX™, MLX, XLS, XLS Extra	5/16" Control-DPX™, 1/4" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
30'	5/16" Control-DPX™, 3/8" XLS	3/8" Control-DPX™, MLX, XLS Extra	5/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 3/8" Control-DPX™
35'	7/16" Control-DPX™, XLS	7/16" Control-DPX™, MLX, XLS Extra	5/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 7/16" Control-DPX™
40'	7/16" Control-DPX™, 1/2" XLS	7/16" Control-DPX™, 1/2" MLX, XLS Extra	3/8" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 7/16" Control-DPX™
45'	1/2" Control-DPX™, 5/8" XLS	7/16" WarpSpeed®, 1/2" Control-DPX™	7/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™
50'	1/2" Control-DPX™, 3/4" XLS	7/16" WarpSpeed®, 1/2" Control-DPX™	7/16" Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™

CONTROL LINE SELECTION (For Topping Lifts, Fore Guys, Boom Vangs, and Cunninghams)

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	3/16" LS, XLS	3/16" AmSteel® XLS, XLS Extra	3/16" AmSteel®Blue, AS-90, Lightning Rope, Tech-12 1/4" AS-78, Ultra-Tech, Validator II, WarpSpeed®
20'	1/4" Control-DPX™, LS, Trophy, XLS	1/4" AmSteel® Control-DPX™, MLX, XLS, XLS Extra	3/16" AmSteel®Blue, AS-90, Lightning Rope, Tech-12 1/4" AS-78, Control-DPX™, Ultra-Tech, Validator II, WarpSpeed®
25'	1/4" Control-DPX™, LS, Trophy, XLS	1/4" AmSteel® Control-DPX™, MLX, XLS, XLS Extra	3/16" AmSteel®Blue, AS-90, Lightning Rope, Tech-12, Ultra-Tech, Validator II, Validator SKB, 1/4" AS-78, Control-DPX™, WarpSpeed®
30'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" AmSteel® Control-DPX™, MLX, XLS, XLS Extra	1/4" AmSteel®Blue, AS-78, AS-90, Ultra-Tech, Validator II, Validator SKB, WarpSpeed® 5/16" Control-DPX™
35'	5/16" Control-DPX™, LS, Trophy, XLS	5/16" AmSteel® Control-DPX™, MLX, XLS, XLS Extra	3/16" AmSteel®Blue, AS-90, Lightning Rope, Tech-12, 5/16" Control-DPX™ 1/4" AS-78, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
40'	3/8" Control-DPX™, LS Trophy, XLS	3/8" AmSteel® Control-DPX™, MLX, XLS, XLS Extra	1/4" AmSteel®Blue, AS-90, Lightning Rope, Tech-12, 3/8" Control-DPX™ 5/16" AS-78, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
45'	7/16" Control-DPX™, LS Trophy, XLS	7/16" Control-DPX™, 3/8" AmSteel® MLX, XLS, XLS Extra	1/4" AmSteel®Blue, AS-90, Lightning Rope, Tech-12, 7/16" Control-DPX™ 5/16" AS-78, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®
50'	1/2" Control-DPX™, LS Trophy, XLS	7/16" AmSteel® MLX, XLS, XLS Extra, 1/2" Control-DPX™	3/8" AS-78, Ultra-Tech, Validator II, Validator SKB, WarpSpeed®, 1/2" Control-DPX™ 5/16" AmSteel®Blue, AS-90, Lightning Rope, Tech-12

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Line Selection Guide

Racing or cruising, Samson makes a line for every application

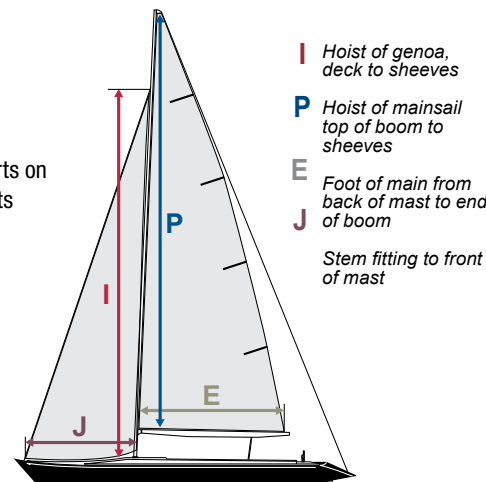
Sheets, halyards and control lines all require different characteristics in strength and stretch. In the charts on the reverse side, you'll find a Samson line engineered for your size boat, the type of sailing you do, and its function in your rig. For sheets, use your sail plan and the sheet load formula provided to determine the appropriate size/strength for your boat and the wind conditions you expect to encounter.

To calculate typical loads on sheets for genoas, jibs, end of boom mainsheets, spinnaker guys and sheets, the following formula can be used: (not applicable to multihull vessels)

$$(\text{windspeed})^2 \times .004 \times (\text{sail area in square feet}) = \text{sheet load at clew in pounds}$$

To calculate sail area based on your sail plan, use the following formulas:

$$100\% \text{ fore triangle} = 1/2J \times I \quad \text{mainsail} = 1/2E \times P$$



HALYARDS

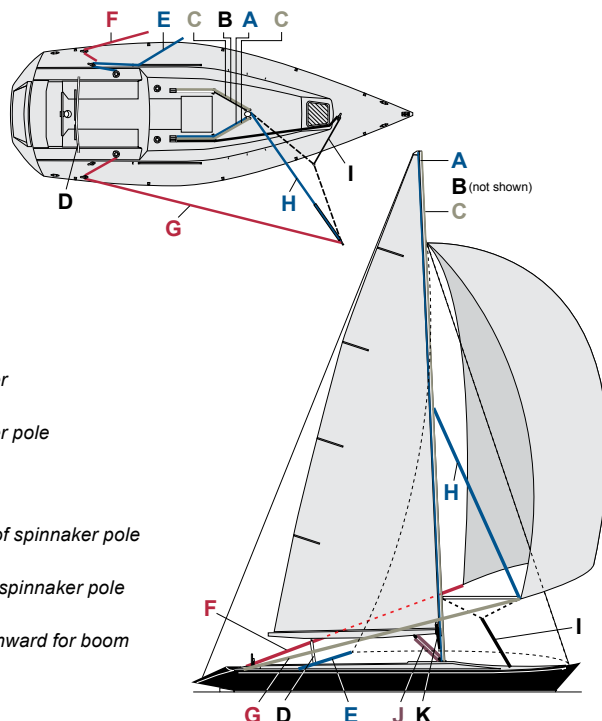
- A Main Halyard**
Usage: Hoist or lower mainsail
- B Jib/Genoa Halyard**
Usage: Hoist or lower jib/genoa
- C Spinnaker Halyard**
Usage: Hoist or lower spinnaker

SHEETS

- D Mainsheets**
Usage: In or out trim of mainsail
- E Jib/Genoa Sheets**
Usage: In or out trim of jib
- F Spinnaker Sheet**
Usage: In or out trim of spinnaker
- G Spinnaker Guy**
Usage: In or out trim of spinnaker pole

CONTROL LINES

- H Topping Lift**
Usage: Up or down adjustment of spinnaker pole
- I Fore Guy**
Usage: Downward tensioner for spinnaker pole
- J Boom Vang**
Usage: Tensioner—usually downward for boom
- K Cunningham**
Usage: Tensioner for mainsail



Breaking Strengths (Approximate average in pounds)

Diameter	7/64"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"
AmSteel®				7,400	10,500	15,500	18,000	27,500	34,000	40,700	52,000
AmSteel® Blue	1,600	2,500	5,400	8,600	13,700	19,600	23,900	34,000	40,500	52,800	64,400
AS-78		2,500	5,400	8,600	13,700	19,600	23,900	34,000	40,500	52,800	64,000
AS-90		2,900	6,100	9,700	15,400	22,100					
Control-DPX™				3,700	5,600	7,300	11,000	14,000			
Lightning Rope	1,400	2,100	5,400	7,900	13,500	18,500	20,600	32,000	41,600	50,600	
LS Yacht Braid			1,200	1,900	2,300	3,700	4,900	7,000		11,000	
MLX				3,800	4,500	7,200	9,500	15,000			
Tech-12		2,800	5,600	8,200	13,000	18,000					
Trophy Braid			800	1,400	2,000	3,000	4,000	6,000			
Ultra-Tech			2,300	4,800	7,800	10,000	14,800	20,000			
Ultra-Lite			1,200	2,200	2,900	4,400					
Validator-12	2,000	2,700	5,500	9,400	14,000	19,500	23,500	35,000	43,000	55,000	
Validator II			3,300	5,000	7,000	11,000	15,200	20,000	26,000	30,000	45,000
Validator SKB			4,800	6,300	8,000	12,900	16,500	22,800	32,500	42,600	53,400
WarpSpeed® / White				5,100	6,200	9,800	14,000	21,000	26,500		
Xceed-78*										33,800	43,800
XLS			1,200	2,200	3,300	4,400	5,800	8,300	11,000	13,600	19,000
XLS Extra / Extra T				2,300	3,500	4,600	6,100	8,700			

*Larger sizes available, see Page 21.

Using Break Strength

The Break Strengths chart lists tested average break strengths for all ropes in this catalog. In selecting ropes keep in mind that standard working loads should be no more than 20% of the rope's rated break strength. All strengths are measured using spliced ropes.

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Elastic Elongation

Using Elastic Elongation Data

For some applications, the amount of stretch of a line under a known load can be critical. Elastic elongation is expressed as a percentage of the line's length under a given load. To use the chart, calculate, or approximate the anticipated load—and determine what percentage (10%, 20%, or 30%) of the rope breaking strength is closest to your load.

Use the percentage listed in the chart to calculate the elongation: multiply the length of the line by the percentage of elongation in the chart. If the percentage of elongation from the chart is 0.44%, multiply the length of the line by .0044.

Elastic Elongation after 50 cycles

% of Breaking Strength	10%	20%	30%
AmSteel®	0.46%	0.70%	0.96%
AmSteel® Blue	0.46%	0.70%	0.96%
AS-78	0.46%	0.70%	0.96%
AS-90	0.47%	0.63%	0.84%
Control-DPX™	0.80%	1.06%	1.32%
Lightning Rope	0.59%	0.68%	0.77%
LS	1.80%	2.60%	3.30%
MLX	0.70%	1.10%	1.40%
Tech-12	0.63%	0.96%	1.20%
Trophy	2.20%	3.10%	3.80%
Validator-12	0.49%	0.78%	0.98%
Validator II	0.59%	0.78%	0.98%
Validator SKB	0.49%	0.72%	0.92%
Ultra-Lite	0.50%	0.80%	1.00%
Ultra-Tech	0.63%	0.97%	1.24%
WarpSpeed® / White	0.44%	0.62%	0.79%
Xceed-78*	0.50%	0.67%	0.96%
XLS	1.50%	2.20%	2.90%
XLS Extra / Extra T	0.50%	0.80%	1.00%

Metric Conversion Chart for Line Diameter and Circumference

Diameter		Circumference	
7/64"	2.5 mm	5/16"	7.5 mm
1/8"	3 mm	3/8"	9 mm
3/16"	5 mm	9/16"	15 mm
1/4"	6 mm	3/4"	18 mm
5/16"	8 mm	1"	24 mm
3/8"	9 mm	1-1/8"	27 mm
7/16"	11 mm	1-1/4"	33 mm
1/2"	12 mm	1-1/2"	36 mm
9/16"	14 mm	1-3/4"	42 mm
5/8"	16 mm	2"	48 mm
3/4"	18 mm	2-1/4"	54 mm
7/8"	22 mm	2-3/4"	66 mm
1"	24 mm	3"	72 mm



SAMSON

THE STRONGEST NAME IN ROPE



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2090 Thornton Street
Ferndale, WA 98248 USA

Tel 01.360.384.4669
Fax 01.360.384.0572
SamsonRope.com