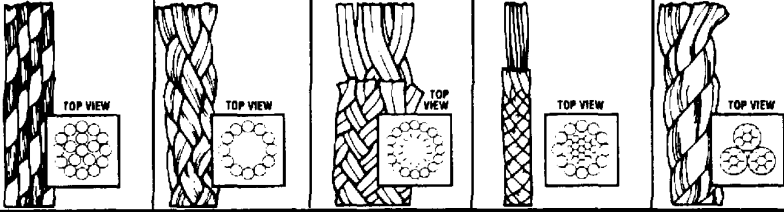


ROPE CONSTRUCTION SELECTION GUIDE

CHARACTERISTICS	SOLID BRAID	HOLLOW BRAID	DOUBLE BRAID	DIAMOND BRAID	TWISTED
Number of Strands or Carriers	9, 12 or 18	8, 12 or 16	16, 24 or 32	8 or 16	3
Spliceable	No	Yes	Yes	No	Yes
Strength to weight	5	2	1	4	3
Flexibility	3	1	2	4	5
Flattens Under Load	No	Yes	No	Yes	No
Rotates Under Load	No	No	No	No	Yes
Mechanical Elongation	1	4	5	3	2
Cost Per Size	2	4	1	3	5
Working Load (as a % of Tensile)	15-20%	15-20%	15-20%	15-20%	8-14%
Abrasion Resistance	1	5	2	3	4
<p>* WARNING: This guide is designed for general reference only. The construction comparisons assume using the same rope fiber and size. Expert advice should be sought when choosing a rope where protection of life or property is involved.</p> 					

ROPE FIBER SELECTION GUIDE: Fiber Properties - Typical Values

	Manila	Sisal	Cotton	Nylon	Polyester	Poly-propylene	Poly-ethylene	Kevlar ¹	Spectra ²
STRENGTH: Breaking Tenacity - Dry (grams/denier) Wet Strength vs. Dry Strength Shock-load Absorption Ability	5.0-6.0 Up to 120% Poor	4.0-5.0 Up to 120% Poor	2.0-3.0 Up to 120% Very Poor	7.0-9.5 85-90% Excellent	7.0-9.5 100% Good	6.5 100% Very Good	6.0 100% Fair	18-26.5 95% Poor	30.0 100% Fair
WEIGHT: Specific Gravity Floats	1.38 No	1.38 No	1.54 No	1.14 No	1.38 No	0.91 Yes	0.95 Yes	1.44 No	0.97 Yes
ELONGATION: Percent at Break Creep (extension under sustained load)	10-12% Very Low	10-12% Very Low	5-12% Very Low	18-25% Moderate	12-15% Low	15-25% High	15-25% High	1.5-3.6% Very Low	3.5% Moderate
EFFECTS OF MOISTURE: Water Absorp. of Indiv. Fibers Dielectric Properties	Up to 100% Very Poor	Up to 100% Very Poor	Up to 100% Very Poor	2-8% Poor	<1% Good	None Excellent	None Excellent	3.5-7.0% Poor	None Excellent
DEGRADATION: Resistance to UV in Sunlight Resistance to Rot and Mildew Storage Requirements	Good Poor Dry only	Good Poor Dry only	Good Poor Dry only	Good Excellent Wet or Dry	Excellent Excellent Wet or Dry	Poor (Black is best) Excellent Wet or Dry	Fair (Black is best) Excellent Wet or Dry	Fair Excellent Wet or Dry	Fair Excellent Wet or Dry
ROPE ABRASION RESISTANCE: Surface Internal	Good Fair	Fair Fair	Poor Fair	Very Good Excellent	Excellent Excellent	Good Good	Good Good	Fair Fair	Very Good Excellent
THERMAL PROPERTIES: Melts at	Does not melt Chars at 350°	Does not melt Chars at 350°	Does not melt Chars at 300°	420-480°	490-500°	330°	275°	800°-Begins to decompose	297°
RESISTANCE⁽³⁾: Resistance to Acids Resistance to Alkalis Resistance to Oils and Gas	Poor Poor Poor	Poor Poor Fair	Poor Fair Poor	Fair Very Good Very Good	Good Fair Very Good	Excellent Excellent Very Good	Excellent Excellent Very Good	Fair Fair Very Good	Excellent Excellent Very Good

¹ Based on Dupont Kevlar® Data ² Based on Allied/Signal Spectra® Data - Type 900 ³ Resistance is relative to the length of exposure, percent of concentration and temperature.

GENERAL TERMINOLOGY

ABRASION RESISTANCE: The degree to which a fiber or fabric is able to withstand surface wear and rubbing.

BINDER TWINE/BALER TWINE: Single-ply twine measuring over 150 but not over 750 feet per pound, containing 8% or more by weight of added nonfibrous substances such as oil, grease or repellent, and chiefly used with harvesting machines or baling machines for binding and tying of cranes or for baling hay, straw, and other fodder or bedding materials.

TWISTED ROPE: Twisted rope is made by twisting a number of threads into a yarn, a number of yarns into a strand, and three strands into a rope. Threads are twisted in a right hand direction, yarns in a left hand direction, and strands in a right hand direction to make the finished rope. This reversal of twist gives the rope a balance of set that resists the tendency to unwind.

In rope making, strands can be twisted or laid into the rope tightly or loosely. Tightly twisted strands make a hard-laid rope that is stiff but more abrasion resistant than soft-laid rope that is limp, but stronger than hard-laid.

BRAIDED ROPE: Braided rope is used largely for small diameter lines such as sash cord and clothes-line. Its strength is slightly superior to twisted rope. Has less of a tendency to elongate when under load. Braided rope offers more positive control for greater safety than conventional three strand rope. Braided rope is made in three styles:

(a.) Hollow Braided: Single braided rope constructed with a center void that gives rise to the name hollow braid.

(b.) Double Braided: Two hollow braided units, one encasing the other, sharing the load for optimum rope efficiency.

(c.) Solid Braided: Rope with braided strands that cross and fill the center. Normally made in small sizes only.

(d.) Flat Braid: A flat braided construction which does not have a hollow center.

(e.) Plain Braid: A cylindrical braid in which one strand (or multiple strands) of one direction of rotation about the axis passes over one strand of the opposite direction and it in turn passes under the next strand of the opposite direction. (*See plaited for more information on types of braids.*)

BREAK FACTOR: A measure of yarn strength calculated as: (1) the product of breaking strength times indirect yarn number, or (2) the product of breaking strength times the reciprocal of the direct yarn number.

BREAKING LENGTH: A measure of the breaking strength of a yarn; the calculated length of a specimen whose weight is equal to its breaking load. The breaking length expressed in kilometers is numerically equal to the breaking tenacity expressed in grams of force per tex.

BREAKING LOAD: The maximum load (or force) applied to a specimen in a tensile test carried to rupture. It is commonly expressed in grams of force (kilograms of force), pounds, or newtons.

BREAKING STRENGTH: 1.) General: The maximum resultant internal force that resists rupture in a tension test. The expression "breaking strength" is not used for compression tests or tear resistance tests in textiles. (2.) Specific: The load or force required to break or rupture a specimen in a

tensile test made according to a specific standard procedure.

BREAKING TENACITY: *The tensile stress at rupture of a specimen (fiber, filament, yarn, cord, or similar structure) expressed as newtons per tex, grams of force per tex, or grams of force per denier.*

PLAITED ROPE: (8 strand construction) European rope manufacturers introduced 8 strand plaited ropes during World War II. Available in all sizes manufactured in 3 strand rope, has the distinct advantage of being more flexible, non-hockling and non-rotating. These features enable longer service life and safer handling.

COMBINATION ROPES: These composites or "blends" have excellent resistance to wear, are lightweight have good loading characteristics, and excellent resistance to solvents and alkalis. These could be combinations of nylon and polyester or polypropylene and dacron blend. Excellent for commercial fishing applications, ski area tow ropes, lock lines, tree ropes, mooring hawsers, etc..

CABLED YARN: A yarn formed by twisting together two or more plied yarns.

CABLED TWIST: A construction of thread, yarn, cord or rope in which each successive twist is in the opposite direction to the preceding twist; and S/Z/S or Z/S/Z construction.

CARRIER: In braiding machinery, that part of a braiding machine that holds the package of yarn, thread, or cord, and carries the yarn when the machine is operated.

CRIMP: 1.) The difference in distance between two points on a fiber as it lies in an

unstretched condition and the same two points when the fiber is straightened under specified tension expressed as a percentage of the unstretched length. 2) The waviness of a fiber expressed as "waves or crimps" per unit length. 3.) The difference in distance between two points on a yarn as it lies in fabric and the same two points when the yarn has been removed from the fabric and straightened under specified tension, expressed as a percentage of the distance between the two points as the yarn lies on the fabric.

a.) **Poor crimp:** *Irregular undulations outside specifications for frequency and amplitude. Common location for poor crimp is along edge of tow band, but not restricted to this area.*

b.) **Saw tooth crimp:** *Regular undulations of excessive amplitude resembling the teeth of the saw.*

DEFORMATION: *A change in the shape of a specimen; for example, in increase in length produced as the result of the application of a tensile load or force. Deformation may be immediate or delayed, and the effect may be recoverable or non-recoverable.*

DEGRADATION: *The loss of desirable physical properties by a textile material due to some process or by some physical / chemical phenomenon.*

DYNAMIC LOAD: *Whenever a load is picked up, stopped, moved or swung, there is an increased force due to dynamic loading. The more rapidly or suddenly such actions occur, the greater this increase will be. In extreme cases the force put on the rope may be two, three, or even more times the normal load involved. For example, picking up the slack on a tow line, or using a rope to stop a falling object. Therefore, in*

all such applications, towing lines, lifelines, safety lines, climbing ropes, etc., published working load limits can **not** be used.

Dynamic effects are greater on a low-elongation rope such as manila than on a high-elongation rope such as nylon, and greater on a shorter length rope, than on a longer length rope. The load must be handled slowly and smoothly to minimize dynamic effects.

ELASTICITY: The property of a material by which it tends to recover its original size and shape immediately after removal of the stress causing deformation.

ELONGATION: The deformation (in the direction of load) caused by a tensile force. Elongation is measured in: 1.) units of length (e.g. millimeters, inches), or 2.) calculated as a percentage of the original specimen length. Elongation may be measured at any specified load or at the breaking load. Also, the increase in length or extension of a specimen during a tensile test is also expressed in units of length, e.g. centimeters, inches, etc..

FIBRILLATION: The act or process of forming fibrils. The act of breaking up a fiber, plastic sheet or similar material into the minute fibrous elements from which the main structure is formed.

FILAMENT: A fiber of an indefinite or extreme length such as found naturally in silk. Man-made fibers are extruded into filaments which are converted into filament yarn, staple, or tow.

HANK: 1.) A skein of yarn. 2.) A definite length of slubbing, roving, or yarn. The length depends on the yarn numbering system in use, for example, cotton hanks have a length of 840 yds. 3.) a synonym for

count as applied to sliver, slubbing or roving.

HIGH TENACITY: A term to describe a material with a higher than normal tensile strength.

IMPACT RESISTANCE: 1.) The resistance of a material to fracture by a blow, expressed in terms of the amount of energy absorbed before fracture. 2.) In yarn or cord, the ability to withstand instantaneous or rapid rate of loading.

LINEAR DENSITY: Mass per unit length expressed as kilograms per meter, pounds per foot or equivalent. The quotient obtained by dividing the mass of a fiber, yarn, or rope by its length.

LINEAR DENSITY SPECIFICATION: An average determined from the equation $L.D. = 25 X (\text{Nom. Diameter})^2$. The tolerance is $\pm 5\%$.

MONOFILAMENT: 1.) Any single filament of a man-made fiber, usually of a denier higher than 15. Instead of a group of filaments being extruded through a spinnerette to form a yarn, monofilaments generally are spun individually. 2.) A yarn consisting of many fine continuous filaments or strands.

PERMEABILITY: The state or quality of being penetrable by fluids or gases.

pH: Value indicating the acidity or alkalinity of a material. A pH of 7.0 is natural, $<7.0 =$ acidity, $>7.0 =$ alkalinity, or basic.

POLYMER: A molecular chain like structure from which man-made fibers are

derived; they are produced by linking together molecular units called monomers.

RESILIENCY: Ability of a fiber or cord to spring back when crushed or wrinkled.

SHOCK-LOADING: A jerking or snatching of a line, or very sudden change in tension, from a state of relaxation or low load to one of high load. Synthetic ropes with higher degrees of elasticity have high energy absorbing qualities and exhibit better impact resistance to shock loading. Ropes that have been shock loaded in use may not break on the initial occasion however, damage and strength degradation may have occurred. Strength loss is not necessarily visible. When a line is knowingly overloaded or shock loaded it should be considered suspect and removed from service.

SNAPBACK: The force imparted by the sudden energy release in a line when it breaks. This force is a function of a load on the line when it breaks and the elastic elongation of the line at that load.

SPECIFIC GRAVITY: ratio of the weight of a volume of substance to the weight of an equal volume of some other substance taken as the standard which is water, for solids and liquids, and air or hydrogen for gases. The range for modern fibers is not too great, and is dependent to possible absorption of liquid into fiber voids.

SPUN: A term which refers to a yarn or fabric made from staple fibers. Spun yarns and fabrics may contain either one or a blend of two or more fiber types.

TENACITY: The tensile stress when expressed as force per unit linear density of the unstrained specimen.

TENSILE STRENGTH: 1.) The greatest longitudinal stress (as pounds per square inch) a substance can bear without tearing apart. 2.) The maximum tensile stress is expressed in force per unit , i.e. kilograms per square millimeter, pounds per square inch or kilopascals.

TORQUE: A force or combination of forces that produces or tend to produce a twisting or rotating motion. When used in describing the performance or characteristic of a yarn, the term torque refers to that character which tends to make it turn on itself as a result of twisting.

WORKING LOADS: Values derived from the minimum breaking strength of a cord or rope divided by the safety factor applied to rope in good condition with appropriate splices, in non-critical applications, and under normal service conditions. They are usually based on static loading conditions or very modest dynamic loads. Published working loads should be exceeded only with expert knowledge of conditions and professional estimates of risk.

**CALL US TODAY WITH
ANY QUESTIONS YOU
HAVE ABOUT CORDAGE.**

ROPE DESCRIPTIONS

NATURAL FIBER ROPE: The three most commonly used natural fibers in rope making are manila, cotton, and sisal. All natural fibers are biodegradable and are therefore susceptible to rot, mildew and bacteriologic damage. Fiber rope making is probably the oldest manufacturing art going back over 6000 years. The cultivation of hemp in China dating as far back as 2000BC, has appeared pictorially in ancient Egyptian tombs.

Originally, cordage was made from animal hairs and the coarse inner fiber of perennial plants such as banana. With the passing of time, people learned to twist, braid and weave the various substances to make ropes of greater length and strength.

MANILA: The fibrous portion of the stalk-type leaves of the abaca plant, harvested from the growing plant over a period of years, the pulp is cleaned away to retrieve the fibers. These fibers, which measure 3' to 8' in length are dried, bundled, graded and used in the manufacture of rope. Native to the Philippine Islands, manila is the strongest of the natural fibers. Color ranges from almost white to deep beige.

SISAL: The agave sisalana grows in East Africa, Brazil, Haiti and several other tropical areas. Resembling the century plant, the leaves grow to a length of 2' to 4' with fibers continuous from end to end. Usually classed with sisal, the henequen plant is native to Mexico's Yucatan peninsula. It differs slightly in color and texture from true sisal. Color ranges from almost white to yellow with beige.

COTTON: (Sash Cord) A very short fiber, naturally white in color. Grown in semi-tropical areas. Good resistance to organic

solvent, but poor resistance to alkalis and acids. Good resistance to UV in sunlight. Water absorption of individual fibers may be as high as 100% of weight.

SYNTHETIC FIBER ROPE: Synthetic fiber ropes are made with individual fiber running the entire length of the rope, in contrast to the short overlapped fibers used in natural ropes. Consequently, they have greater strength. In addition, synthetic ropes are lighter, easier to handle and have better impact, fatigue and abrasion resistance than natural ropes. They will outwear manila by 4 to 5 times. Synthetic ropes are generally impervious to rot, mildew, and fungus. Certain types are chemical resistant. All have good dielectric properties when clean and dry. The three most commonly used synthetic fiber for ropes are nylon, polyester and polypropylene.

NYLON: The most widely accepted synthetic rope material. Very high breaking strength, wet or dry. It is at least 2-1/2 times stronger than manila. Excellent elastic and tensile properties; capable of withstanding severe and sudden shock. Superior impact resistance. Excellent abrasion resistance. High melting point. Nylon does not soften as temperature rises. Can be used in temperatures to 190 degrees. Retains all physical properties until almost reaching its melting point.

Nylon is highly resistant to alkalis, but is rapidly attacked by most acids, paint and linseed oil. It is recommended that all contact with chemicals be avoided.

POLYESTER: (Trade names: Dacron and Mylar by DuPont, Terylene by I.C.I. Fibres) Polyester is becoming increasingly popular for rope and cordage use since it has significantly less elongation than nylon, yet has nearly the same strength. Heaviest of all

synthetics. Shock absorbing ability 2/3 times that of nylon, with very little stretch. Does not lose strength when wet, abrasion and creep resistance approximate to nylon. Also like nylon, polyester does not soften with a rise in temperature and can be used in similar high temperatures and atmospheres. Resistant to sunlight.

POLYPROPYLENE: A compromise between natural rope and the more sophisticated synthetics like nylon and polyester. Polypropylene rope is not as strong as nylon or polyester; but since it is so lightweight, it floats. Does not lose strength when wet. Shock absorbing ability is 1/2 times that of nylon. Stretches slightly more than polyester.

Unlike nylon and polyester, polypropylene softens with a rise in temperature. This performance, combined with a relatively low melting point makes it unsuitable for use in high temperature conditions. Degrades in sunlight.

Polypropylene resists acids and alkalis, but is softened by industrial solvents.

KERNMANTLE ROPE: (Braided - KMIII) KMIII Static Kernmantle rope is a composite construction of nylon and polyester fibers providing an ideal line for rescue operations. KMIII features high tensile strength, low stretch, good heat, chemical and abrasion resistance, it is torque-balanced for no spin when rappelling. This is a balance construction with the cover and core each representing 50% of the weight of the rope. The cover is made of continuous filament polyester, braided over a continuous filament nylon core. This provides excellent handling, knot holding and rugged protection from abrasion and cutting.

MAHOGANY BRONZE: A 6X42 bronze wire rope covered with a cotton braided jacketed mahogany colored (dyed) sash cord. Also available with a 7X19 galvanized aircraft cable core and natural jacket.

TILLER CABLE: (Vinyl Jacketed Steel) Strong, flexible, twisted cable protected with a tough, abrasion and weather resistant clear vinyl jacket. Provides efficient steering system for outboard boats and has many other home and industrial uses.

KEVLAR: Generically termed as an aramid this new fiber is related to nylon. A very long synthetic molecular chain is formed by rearranging the chemical structure of aromatic polyamides. Aramid fibers are about 26% heavier than polyamide fibers but have twice the strength. Temperature and flame resistant, these fibers offer good resistance to most chemicals. *it also has many shortcomings. Consult us or manufacturer to familiarize yourself with them.*

SPECTRA: A polyethylene fiber that is made up of ultra-high molecular alignment, results in a fiber that is 10 times stronger by weight than steel, and more than three times stronger than polyester on an equal basis. Spectra also possesses incredible abrasion resistance, low elongation to break, low density (so low that it floats), excellent UV and moisture resistance, high energy absorption, and is inherently resistant to many chemicals.

CAUTION CAUTION CAUTION CAUTION

Never allow anyone to stand in line with or within 45 degrees on either side of a rope under tension. Should the rope, or other parts of the assembly fail, the recoil force could cause serious injury or damage, especially if the rope is nylon.

Failure of a tensioned rope and/or connections is a serious hazard. Sudden loss release from a tensioned rope causes snapback, which can result in personal injury or death.

Recoiling rope may oscillate violently in an unpredictable path away from point, hitting anything in its way with great impact. Personnel in the path of recoiling rope may be seriously hurt or even killed. Rope and its connecting hardware must be selected with sufficient safety factors for the specific dynamic use condition and the rope and/or connector must be inspected before each use and replaced if worn, frayed or cut.

PROPER USE AND CARE OF CORDAGE

AVOID OVERLOADING

Working loads should be exceeded only with expert knowledge of conditions and professional estimates of risk. Working loads should be reduced where life, limb or valuable property is involved; or for exceptional service conditions such as shock loads, sustained loads, etc.

AVOID ABRASION

Outer and inner rope fibers contribute equally to the strength of your rope. When worn your rope is naturally weakened. Where it is necessary for a rope to rub over an object, protect it with chafing gear such as canvas wrapped and tied around the rope.

AVOID SUDDEN STRAIN

Rope that is strong enough under a steady strain can be broken with a sudden jerk. Care when working with the rope is extremely important.

AVOID KINKS

When rope is repeatedly turned or twisted in one direction, it is certain that kinks will develop unless twists are repeatedly thrown in or out of the rope. Pulling a kink through a restricted space such as a tackle block will seriously damage the rope.

AVOID SHARP ANGLES

Sharp bends greatly affect the strength of a rope. Any sharp angle is a weak spot. Pad the area for safety and even then use caution.

REVERSE ENDS

Prolonged use or wear of one part of a rope will naturally decrease its effectiveness at that point. Occasionally reverse your rope, end for end, and this will distribute the wear more evenly. A good example is an anchor line.

AVOID CHEMICALS

Virtually all synthetic fiber ropes are resistant to damage from oil, gasoline, paint and most chemicals. To maintain safe practices, keep your rope free of any type of chemical. Natural fiber ropes are, of course, severely damaged by exposure to chemicals.

KEEP ROPE CLEAN

Dirt on the surfaces and imbedded in rope acts as an abrasive on the fibers. When rope becomes dirty, wash it thoroughly with clean water. Be sure to dry natural fiber ropes before storing.

AVOID IMPROPER STORAGE

Synthetic fiber ropes require no special storing conditions other than keeping them out of direct sunlight, away from elements and out of extremely hot rooms. The ultra-violet rays of sunlight have a weakening effect on rope that is exposed for long periods of time. Natural fiber ropes must be kept dry or they will rot in a very short period of time.

**QUESTIONS? JUST CALL OR
FAX FOR ANSWER!**

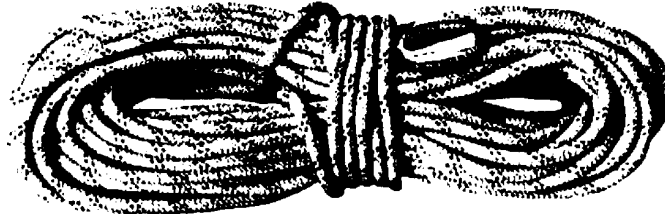
MULTI-STRAIGHT FILAMENT JACKETED ROPES

KERMANTLE

The word kernmantle, a German derivation, describes a braided rope made of a core strength member (kern) over which is braided a sheath (mantle). There are two types of products in this category: Dynamic and Static.

Dynamic: Dynamic rope is constructed to absorb a great amount of energy in a fall situation thereby lessening the impact on the person being arrested.

Static: A Static rope, in contrast, offers less elongation or stretch in either normal use or fall arresting, and is generally preferred for rappelling.



Maxim is the first American made kernmantle rope to receive UIAA certification. Originally designed for search and rescue.

Construction features unique stranded core yarns of perlon type nylon fiber held in place by a tightly braided highly abrasion resistant cover. This 100% nylon rope knots easily and is extremely flexible and free running.

Maxim has considerably less impact force on the person being arrested in a fall.

Maxim is readily identified by its Royal Blue cover with Red surface markers.

MAXIM BLUE 11MM

Samsel P/N	CDG 555
Size (Dia.)	11MM (7/16x600)
Average Bowline	
Tensile Strength (lbs.)	3,300
Est. Avg. Tensile Strength (lbs.)	5,500
Static Elongation	6%*
Impact force (lbs.)	2070*
Dynamic Falls Sustained	10*

* when tested under UIAA procedure.

The synthetic fibers used in Kernmantle rope constructions all share the same three main enemies: sunlight, acids and abuse. Any can damage the rope without leaving any visible evidence.

KMIII static kernmantle rope is a composite construction of nylon and polyester fibers, providing an ideal line for rescue operations. KMIII features high tensile strength, low stretch good temperature, chemical abrasion resistance with no spinning tendencies when rappelling. KMIII is a balanced construction where the cover and core each represent 50% of the weight of the rope. The cover is made from continuous filament nylon protection from severe longitudinal abrasion and cutting.

KMIII ROPE

Samsel P/N	color	Dia/Length	
CDG 675	Wht	11mm	7/16x600
CDG 677	Wht		1/2x600
CDG 678	Blk		1/2x600
CDG 679	Wht		5/8x600
CDG 680	Orn		1/2x600
Size (Dia.)		1/2"	5/8"
Average Bowline			
Tensile Strength (lbs.)		5,000	7,600
Est. Avg. Tensile Strength (lbs.)		8,300	12,700
Working Elongation			
@450 lbs.		2%	2%
@900 lbs.		3%	3%

KEXLON II ROPE

Kexlon II is a double braid utilizing DuPont* aramid fiber for the high strength core, and a special Duron fiber for the abrasion resistant cover. It is widely used to replace wire where extremely low stretch and high strengths are critical. Samthane** coatings are available to enhance identification and improve external abrasion resistance.

Characteristics:

- High strength-to-weight ratio
- Very low stretch
- Stays flexible, easy to handle
- Good abrasion resistance
- Fully spliceable
- Coating available
- Specific gravity: 1.42

Recommended Use:

- Deep sea mooring lines
- Tethering lines
- Oceanographic array lines
- Underground pulling lines

* Kevlar is a trademark of DuPont

** Samthane trademark

Dia. Size	Cir. Size	Approx. Avg. Tensile-lbs.	Approx. Wgt. CFT-lbs.
*3/16"	9/16"	2,000	1.2
1/4"	3/4"	4,000	2.4
5/16"	1"	5,600	3.6
3/8"	1-1/8"	7,500	4.7
7/16"	1-1/4"	12,000	7.2
*1/2"	1-1/2"	15,000	9.1
9/16"	1-3/4"	18,000	11.0
*5/8"	2"	22,000	13.6

* Dia. sizes are in stock 3/16x3000 CDG 676, 1/2x600 CDG 687, 5/8x600 CDG 689

HOW MUCH LINE CAN BE STORED IN BOX OR BIN?

(Assuming line is to be dropped into and not carefully laid in)

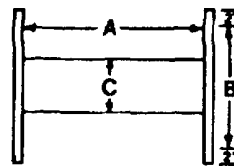
- V = Cubic footage required
- C = Rope circ. in inches
- L = Length of rope in feet

Example: 2" circ.² = 4 x 15,000 = $\frac{60,000}{830}$ = 72 Cu. Ft. Required.

Box will hold entire length.

$$V = \frac{C^2 \times L}{830}$$

HOW MUCH LINE ON A DRUM OR REEL?



$$\frac{A (B^2 - C^2)}{15.3 \times \text{rope dia.}^2} = L$$

CAUTION: Do not put line on reel under tension. To do so can cause extreme contracting forces to crush drum.

BRAIDED ROPES/ PLAITED ROPES

PLAITED 8-STRAND the best of today's industries. The 8-strand lines from 3/16" diameter to 16" circumference, in lengths to 20,000 feet, in nylon, polyester, P/D 10, P/D 11, P/D 101, polypropylene. Constantly tests and evaluates new fibers and blends. 8-Strand construction, available in all the sizes manufactured in 3-strand rope, has the distinct advantage of being more flexible, non-hocking and non-rotating. These features enable longer service life and safer handling. Engineers have found the 8-strand was superior as a cost effective, safe, serviceable line.

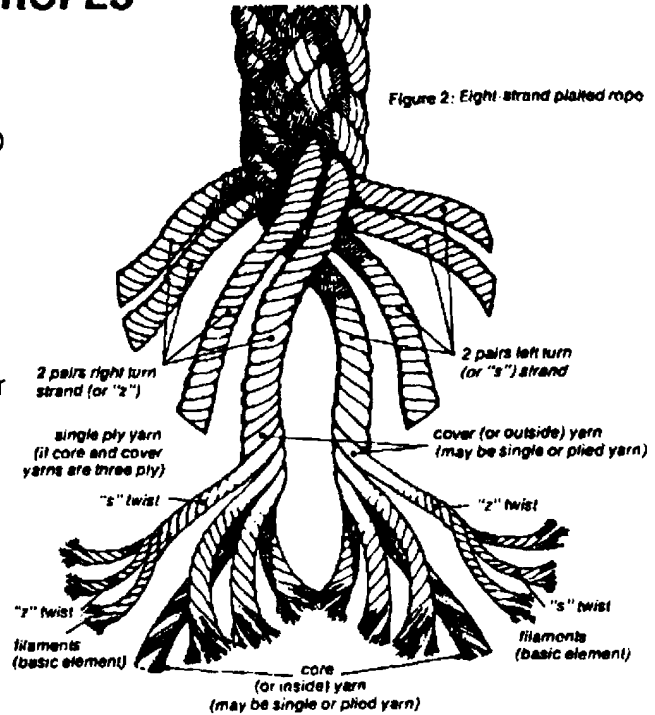


Figure 2: Eight-strand plaited rope

Samsel P/N

- CDG 270 Polyester 8 Strand 1-1/8"x1200
- CDG 624 Polydacron 8 Strand 3"x1200
- CDG 625 Polydacron 8 Strand 4"x1200
- CDG 704 Polydacron 8 Strand 2 5/8"x1200
- CDG 705 Polydacron 8 Strand 2 1/4"x1200

Size (Inches)		Filament NYLON				Filament POLYESTER†				POLYPRO 6			
Dia.	Cir.	Pounds/100 feet	Feet/Pound	New Rope Tensile Strength (Lb.)	Working Load (Lb.)*	Pounds/100 feet	Feet/Pound	New Rope Tensile Strength (Lb.)	Working Load (Lb.)*	Pounds/100 feet	Feet/Pound	New Rope Tensile Strength (Lb.)	Working Load (Lb.)*
3/16	5/8	—	—	—	—	—	—	—	—	—	—	—	—
1/4	3/4	—	—	—	—	—	—	—	—	—	—	—	—
5/16	1	—	—	—	—	3.1	32.3	3,600	360	—	—	—	—
3/8	1-1/8	3.6	27.8	3700	308	4.1	24.4	4,500	450	2.7	37.0	2,800	280
7/16	1-1/4	4.6	20.4	5000	456	—	—	—	—	4.2	23.8	3,850	406
1/2	1-1/2	6.2	16.1	6400	582	7.97	12.5	8,000	667	5.3	18.87	4,500	300
9/16	1-3/4	7.5	13.3	8000	800	10.1	9.90	7,800	976	6.4	15.63	5,200	650
5/8	2	10.2	9.8	10,400	1,040	13.9	7.19	8,500	1,063	7.7	12.99	6,800	850
3/4	2-1/4	14.1	7.1	15,000	1,867	18.1	5.52	12,000	1,714	10.5	9.52	9,500	1,357
13/16	2-1/2	16.2	6.2	18,500	2,111	—	—	—	—	13.5	7.41	11,000	1,571
7/8	2-3/4	19.5	5.1	21,000	2,333	24.9	4.02	18,000	2,571	14.8	6.76	12,800	1,829
1	3	25.0	4.0	25,000	2,776	30.7	3.26	22,000	3,143	18.3	5.46	15,000	2,143
1-1/16	3-1/4	—	—	—	—	36.0	2.78	25,500	3,643	—	—	—	—
1-1/8	2-1/2	33.9	2.9	33,000	3,667	40.0	2.5	29,500	4,214	26.5	3.77	19,300	2,757
1-1/4	3-3/4	40.0	2.5	37,500	4,167	46.8	2.13	33,200	4,743	29.0	3.45	22,400	3,200
1-5/16	4	43.0	2.3	43,000	4,778	50.3	1.99	37,500	5,357	30.5	3.26	24,000	3,429
1-1/2	4-1/2	50.0	2.0	55,000	5,111	66.0	1.52	46,800	6,686	36.0	2.63	31,000	4,543
1-5/8	5	66.0	1.47	69,000	7,887	85.4	1.17	60,000	8,572	47.5	2.11	36,000	5,571
1-3/4	5-1/2	82.0	1.06	78,000	8,867	98.0	1.02	71,000	10,143	60.0	1.67	44,500	6,357
2	6	95.0	1.05	95,000	10,556	116	0.86	80,000	11,429	72.5	1.38	54,000	7,714
2-1/8	6-1/2	108	0.92	106,000	11,776	129	0.78	92,000	13,143	81.7	1.22	61,500	8,786
2-1/4	7	125	0.80	126,000	13,889	153	0.65	110,000	15,714	96.0	1.04	69,000	9,867
2-1/2	7-1/2	141	0.71	137,000	15,222	177	0.56	122,000	17,429	107	0.93	80,000	11,429
2-5/8	8	167	0.60	165,000	18,334	205	0.49	142,000	20,268	120	0.83	90,000	12,857
2-7/8	8-1/2	186	0.53	180,000	20,000	230	0.43	159,000	22,714	137	0.73	101,000	14,429
3	9	214	0.47	200,000	22,222	258	0.39	180,000	25,714	153	0.65	114,000	16,285
3-1/4	10	262	0.38	250,000	27,778	312	0.32	214,000	30,571	190	0.53	137,000	19,571
3-1/2	11	319	0.31	300,000	33,333	375	0.27	250,000	35,714	232	0.43	162,000	23,143
4	12	364	0.26	360,000	40,000	454	0.22	290,000	41,429	275	0.36	180,000	25,714
4-1/4	13	—	—	—	—	—	—	—	—	320	0.31	210,000	30,000
4-5/8	14	—	—	—	—	—	—	—	—	366	0.27	240,000	34,286
5	15	565	0.17	570,000	63,000	—	—	—	—	420	0.24	277,000	38,571

† Fibers such as Dacron (DuPont Registered Trademark) are polyester. NOTE: For composition of TM ropes, refer to general catalogs.

* For specialty rope data, refer general catalogs.

** Available in sizes not shown. Specifications on inquiry.

BRAIDED ROPES/DOUBLE BRAIDED NYLON ROPE

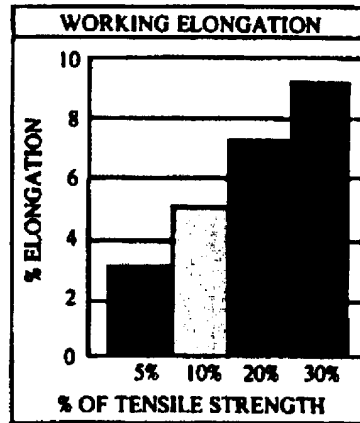
Features

- Specific Gravity of 1.14 * Minimum UV degradation
- Renders well on winches * High elongation
- Torque free * Virtually unlimited lengths
- Excellent strength * Best energy absorption



Double Braided Nylon is one of the strongest and most durable of all conventional synthetic fiber ropes. It is made with premium high tenacity nylon fibers, produced in the United States and subjected to extensive quality control procedures.

DOUBLE BRAIDED NYLON			
NOMINAL SIZE		WEIGHT/LBS. 100 FT.	AVERAGE TENSILE STRENGTH
DIAM.	CIRC.		
3/16"	9/16"	0.9	1,200
1/4"	3/4"	1.6	2,200
5/16"	1"	2.5	3,400
3/8"	1-1/8"	3.6	4,900
7/16"	1-1/4"	4.9	6,600
1/2"	1-1/2"	6.3	8,500
9/16"	1-3/4"	8.0	10,800
5/8"	2"	10.0	13,500
3/4"	2-1/4"	14.3	19,400
7/8"	2-3/4"	19.4	26,300
1"	3"	25.4	34,000
1-1/8"	3-1/2"	35	46,000
1-1/4"	3-3/4"	40	52,000
1-5/16"	4"	45	58,000
1-1/2"	4-1/2"	58	74,000
1-5/8"	5"	71	90,000
1-3/4"	5-1/2"	85	106,000
2"	6"	102	126,000
2-1/8"	6-1/2"	119	145,000
2-1/4"	7"	138	166,000
2-1/2"	7-1/2"	159	189,000
2-5/8"	8"	181	213,000
2-3/4"	8-1/2"	204	237,000
3"	9"	228	261,000
3-1/4"	10"	282	319,000
3-5/8"	11"		



Compliance to the above specifications is based upon testing according to the Cordage Institute Standard Test Methods for Fiber Rope and/or ASTM-D-4268 Standard Methods of Testing Fiber Rope. Linear Densities- Are average and within maximum 5% more then listed.

- 1/4x600 CDG 133 3/8x1200 CDG 136
- 1/2x1200 CDG 141 1-1/4x600 CDG 1418
- 3/4x1200 CDG 1410 7/8x600 CDG 1414
- 1 x600 CDG 1416 1x1200 CDG 1417

All Sizes to 1 1/4

Working Loads: No blanket working load recommendations can be made because it depends on the application and conditions of use, especially potential danger to personel. It is recommended that the user establish working loads and safety factors based on professional and experienced assessment of risks. The working load is a guideline for use of a rope in good condition for non-critical applications and should be reduced where life, limb or valuable property are involved, or for exceptional service such as sustained loading, severe vibration, etc. In this type of Non-critical application safety factors range from 5 to 12. The formula to determine the working load as established by the Cordage Institute is:

$$\text{Working Load} = \frac{\text{Minimum Break Strength}}{\text{Safety Factor}}$$

The Cordage Institute has established safety factors for double braided nylon in non-critical application which are based on Static Load Conditions Only, and range from 7 to 11, depending on the size. To estimate the minimum tensile strength of a new rope, reduce the approximate average by 15%.

BRAIDED ROPES/DOUBLE BRAIDED NYSTRON ROPE

Features

- Excellent abrasion resistance, wet or dry
- Provides high working load
- Superior wet strength retention: 90% of dry strength
- Easily spliced
- Specific gravity: 1.24

Size Dia.	Size Circ.	Approx. Avg. Strength-lbs.	Approx. Wgt. per 100ft.-lbs.
1/4"	3/4"	2,930	2.2
5/16"	1"	4,290	3.3
3/8"	1-1/8"	5,620	4.3
7/16"	1-1/4"	7,370	5.7
1/2"	1-1/2"	10,500	7.7
9/16"	1-3/4"	13,200	10.0
5/8"	2"	16,300	12.6
3/4"	2-1/4"	23,000	17.3
7/8"	2-3/4"	30,800	23.7
1"	3"	40,400	31.5
1-1/8"	3-1/2"	49,800	39.2
1-1/4"	3-3/4"	59,100	46.9

Nystron combines high tenacity nylon and polyester fibers providing the advantages of high strength retention, good energy absorption, and shock mitigation and excellent abrasion resistance, especially in wet environments. Application include headlines, ship mooring lines, stringing lines and winch lines.

Nylon Yacht Braid

This high quality double braided rope is manufactured to meet and exceed the most exact industrial and marine requirements. Its flexibility, strength and inherent elasticity make it ideal for mooring, docking and anchoring, as well as a number of industrial applications where these characteristics are essential. Nylon twin braid is easy to splice, and comes in white or gold/white color.



600' and 1200' Available

Size Dia.	Put up	Approx. Ft./Lb. ± 5%	Nt. Wght.	New Rope Tensile Strength (Lbs.)	Recommended Working Load (Lbs.)
1/4" x 600 FT.	REEL	63.0	9.5	1700	340
5/16" x 600 FT.	REEL	38.0	15.5	2700	540
3/8" x 600 FT.	REEL	27.0	22	3900	780
7/16" x 600 FT.	REEL	20.0	29	5100	1020
1/2" x 600 FT.	REEL	15.0	39.5	6900	1380
5/8" x 600 FT.	REEL	9.0	68	12000	2400
3/4" x 600 FT.	REEL	7.0	88	15000	3000
1" x 600 FT.	REEL	4.0	156	26500	5300

WORKING LOADS are for rope in good condition with appropriate splice, in non-critical applications, and under normal service conditions. Working loads should be exceeded only with expert knowledge of conditions and professional estimates of risk. Working loads should be reduced where life, limb, or valuable property is involved, or for exceptional service conditions such as shock, loads, sustained loads, etc.

BRAIDED ROPES/DOUBLE BRAID WITH FIBER

Features

- Lowest stretch standard double braided rope available
- Advanced fiber technology
- Good abrasion resistance, wet or dry
- High strength-to-weight ratio
- Torque-free
- Flexible, easy to handle
- Minimal UV degradation
- Coatings that can enhance abrasion protection
- Specific gravity: 1.38

A 100% polyester braided rope construction utilizing Duron fiber technology. Stable Braid provides the best combination of high strength, low stretch and abrasion resistance of any all-polyester strength member. Also available with special coatings to enhance identification and abrasion protection.

Prod. # CDG	Dia.	Size Circ.	Approx. Avg. Strength-lbs.	Approx. Wgt. per 100ft. -lbs.
1371	1/4"	3/4"	2,800	2.3
139	5/16"	1"	4,200	3.5
1391	3/8"	1-1/8"	5,600	4.7
—	7/16"	1-1/4"	7,360	6.2
1392	1/2"	1-1/2"	9,870	8.5
—	9/16"	1-3/4"	12,600	10.9
1395	5/8"	2"	15,500	13.7
1396	3/4"	2-1/4"	19,400	17.2
1397	7/8"	2-3/4"	26,400	25.9
1398	1"	3"	37,200	34.4
—	1-1/8"	3-1/2"	45,800	42.7
1399	1-1/4"	3-3/4"	54,400	51.2
A	1-5/16"	4"	61,500	58.6
V	1-1/2"	4-1/2"	71,300	68.6
A	1-5/8"	5"	87,200	84.5
L	2"	6"	124,000	124.0
I	2-1/4"	7"	166,000	170.0
A	2-5/8"	8"	212,000	221.0
B	3"	9"	278,000	294.0
L	3-1/4"	10"	343,000	368.0
E	3-5/8"	11"	407,000	442.0
	4"	12"	470,000	515.0

STA-SET®



Manufactured from 100% continuous filament Dacron fiber, it is prestretched by an extra process step that stabilizes the rope through heat setting. This extra step results in dimensional stability, and minimizes service hardening, so Sta-Set will maintain the same easy handling qualities throughout its service life. It also makes resplicing considerably easier.

Unlike other low-stretch braids, Sta-Set is an extremely flexible and nice handling rope, easy to splice and longwearing, due to its 50/50 construction-the cover contains the same amount of stock as the core. It's the ideal product for all rope halyards and, because of its easy handling, Sta-Set performs equally well for sheets and all types of running rigging.

STA-SET® Packaged on 600 Ft. Reels

Dia.	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
*Avg. Tensile Strength	1300	3400	6600	11,500	18,400	27,800		
Wt./100' (Lbs.)	1	2	3	4.4	6	8	11	14

Available Color Coded (Fleeced) Red, Blue, Green

DOUBLE BRAIDED POLYESTER / NYLON

Features

- Very High Strength
- High Stretch
- Good Energy Absorption
- Abrasion Resistance
- Non-Rotating

The Double Braided Polyester / Nylon combination provides a uniquely balanced construction of different fibers that produces very high tensile strengths. It is 5 to 18% stronger than nylon or polyester double braids while providing elasticity and energy absorption compatible to all nylon rope. Although the stretch characteristics are quite similar to nylon double braid, the 100% polyester outer braid gives the DBP/N abrasion resistance that is superior to an all nylon rope.

UV / Aging: Polyester cover provides good resistance to UV and aging

Chemicals: Polyester has good resistance to most chemicals, except to 95% sulfuric acid and strong alkalines at the boiling. Nylon will degrade with strong oxidizing agents and mineral acids. Substantially inert in alkalis. Insoluble in most organic solvents. Withstands most bleaching solutions.

Heat: Progressive strength loss above 300F. Melting point 480F.

Dielectrics: Good resistance to passage of electrical current in new, clean and dry condition. However, dirt, contaminants and water entrapment can significantly lower dielectric properties. Extreme caution should be used whenever rope is used around energized line.

Sheaves: Recommended D/d ratio is 8:1

Working Loads: No blanket working load recommendations can be made because they depend on the application and conditions of use, especially potential danger to

STRENGTH/WEIGHT			
NOMINAL SIZE		WEIGHT/LBS. 100 FT.	AVERAGE TENSILE
DIAM.	CIRC.		
1/4"	3/4"	1.9	2,500
5/16"	1"	3.0	3,900
3/8"	1-1/8"	4.3	5,600
7/16"	1-1/4"	5.8	7,500
1/2"	1-1/2"	7.6	9,900
9/16"	1-3/4"	9.6	12,500
5/8"	2"	11.9	15,500
3/4"	2-1/4"	17.1	23,200
7/8"	2-3/4"	23.3	30,300
1"	3"	30.4	40,000
1-1/8"	3-1/2"	38	50,000
1-1/4"	3-3/4"	45	58,000
1-5/16"	4"	57	73,000
1-1/2"	4-1/2"	68	87,000
1-5/8"	5"	80	101,000
1-3/4"	5-1/2"	97	121,000
2"	6"	115	143,000
2-1/8"	6-1/2"	134	168,000
2-1/4"	7"	157	194,000
2-1/2"	7-1/2"	178	219,000
2-5/8"	8"	203	248,000

% OF TENSILE STRENGTH	% ELONGATION
5%	3%
10%	5%
20%	7%
30%	9%

Compliance to the above specifications is based upon testing according to the CI STM for fiber rope and/or ASTM D-4268 Standard Test Methods of testing fiber ropes.

Linear Densities- Are average within maximum 5% more than listed

Tensile Strength- Are Approximate Average for new, unused rope. To estimate the minimum tensile strength of a new rope, reduce the approximate average by 20%

personnel. It is recommended that the user establish working loads and safety factors based on professional and experienced assessment of risk. Cordage Institute Rope Specifications have a safety factor range from 7 to 10, depending on size, for 3 and 8-strand polyester ropes and 7 to 11 on nylon ropes- UNDER STATIC LOAD CONDITIONS ONLY. The Cordage Institute formula for determining the safe working load is

$$SWL = \frac{\text{Minimum Break Strength}}{\text{Safety Factor}}$$

CLIMBING SAFETY BLUE

Braided Safety Blue is manufactured from a very low stretch polyester fiber, plied over a core of high tenacity blue nylon. This provides High Strength, low stretch and good abrasion resistance, while minimizing the bounce prevalent in many climbing ropes. Resistant to rot, mildew and most chemicals. Safety Blue is also a non-rotating construction that cannot be backturned or hockled. This product is specifically designed for tree climbing and utilizes the same safety core of high tenacity Blue nylon as found in our 3-Strand Safety Blue. Around this core we braid tightly plied yarns of polyester covered polypropylene. The extra steps of plying locks in the fibers to minimize snagging while substantially improving performance and service life. This is an excellent climbing rope: flexible, easy handling, works exceptionally well in poor locking and doesn't bunch at the knot when moving up the rope.



Samsel P/N	CDG 623
Size (Dia)	1/2x600
Weight/100Ft.	7.0 lbs.
Average Bowline Tensile Strength	3,500 lbs.
Average Tensile Strength	5,800 lbs.
Working elongation% at Various Loads	
200lbs.	1.5%
400 lbs.	2.4%
800 lbs.	3.8%

DACRON DOUBLE BRAID

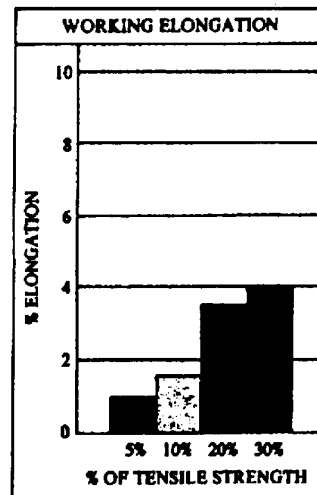
Dacron - Dupont's trade name for their superior polyester fiber. Much less elastic than nylon with slightly lower tensile strength. Not affected by common alkalies or acids. Excellent weathering characteristics on exposure to sunlight. Very good resistance to abrasion, wet or dry: renders well over winches. Application where low stretch is required such as halyards, sheets, guylines, bull ropes and fall lines.

STRENGTH/WEIGHT			
NOMINAL SIZE		WEIGHT/LBS. 100 FT.	AVERAGE TENSILE
DIA.	CIRC.		
3/8"	1-1/8"	4.8	6,760
7/16"	1-1/4"	6.4	9,000
1/2"	1-1/2"	8.9	11,900
* 9/16"	1-3/4"	10.5	15,100
* 5/8"	2"	11.9	16,370
3/4"	2-1/4"	18.0	23,500
7/8"	2-3/4"	25.5	33,100
1"	3"	32.4	43,880

Compliance to the above specifications is based upon testing according to the Cordage Institute Standard Test Methods for Fiber Rope and/or ASTM D-4268 Standard Methods of Testing Fiber Ropes.

Weights: Are average and may vary ±5%.

Tensile Strengths: Are approximate Average for new, unused rope. To estimate the minimum tensile strength of a new rope, reduce the approximate average by 15% (Cordage Institute defines minimum tensile strength as two standard deviations below the average tensile strength of the rope).



*a standard stock item. Other sizes are in stock but may not be standard stock

SOLID BRAID NYLON ROPE



Nylon cord is widely used in marine, industrial, home and farm applications. The superior performance of nylon more than offsets its higher initial cost. This round firm cord is characterized by a high tensile strength and light weight, even when wet. It has excellent resistance to abrasion, mold, mildew and most chemicals. It is rot proof and not damaged by oil or gasoline. Nylon is an elastic cord with excellent recovery- a quality that gives it a shock absorbing action-allowing it to absorb shock loads that would break other cords of equal size.

Samsel P/N	Rope No.	Dia Inches	Approximate New Rope Tensile Strength (lbs)	Maximum Recommended Working load	Approx Yield Per lbs
CDG 160	#3-1/2	7/64x3000	N/A	N/A	N/A
CDG 106	#4	1/8x1000	475	110	210 ft.
CDG 113	#4	1/8x3000			
CDG 108	#4-1/2	9/64x3000	N/A	N/A	N/A
CDG 109	#5	5/32	N/A	N/A	N/A
CDG 111	#6	3/16x1000	860	175	125 ft.
CDG 116	#8	1/4x1000	1400	275	82 ft.
CDG 121	#10	5/16x1000	1800	550	41 ft.
CDG 126	#12	3/8x1000	2700	725	32 ft.
CDG 131	#16	1/2x500	5200	1000	20 ft.
CDG 132	#16	1/2x1000			

SOLID BRAIDED POLYETHYLENE

A firm, round rope. Polyethylene will hold knots better than polypropylene and has a slippery surface feel.



Size No.	Dia. In.	RWL* Lbs.	Put up FT.	Unit Wt. Lbs.
4	1/8	37	1000 Spool	6
* 5	5/32	56	1000 Spool	7
6	3/16	84	1000 Spool	9

* standard stock item.
Others also available.
5/32 CDG 294 YLW

KNOTS CAN CUT YOUR STRENGTH!

Whenever possible lines should be spliced and not tied in knots. Lines should not be subjected to bending radius less than diameter of line. Preferable 8 X diameter will extend life of line.

Percent of strength loss	
Eye Splice	10%
In Line Splice	10%
Bowline	35%
Square Knot	36%
Two Half Hitches	31%

SOLID BRAID POLYPROPYLENE ROPE

A firm, round, flexible, and easy handling rope produced from monofilament polypropylene. The



luxury look with an economy price, that works well in pulleys and on winches. Often used for marine applications requiring a floating rope. It is resistant to rot, mildew, petroleum products, and most chemicals.

Rope No.	Dia Inches	Approximate New Rope Tensile Strength lbs	Maximum Recommended Working Load	Approx. Yield per lbs.
* 4	1/8	225	55	375 ft.
* 6	3/16	400	110	195 ft.
8	1/4	750	140	140 ft.
10	5/16	1000	200	92 ft.
* 12	3/8	1370	275	61 ft.

Samsel P/N CDG 464 #6 3/1 CDG 468 #4 1/8 * standard stock items
 CDG 469 #12 3/8 ALL 1000 Ft. length, Yellow

Solid braid ropes are constructed with 9, 12 or 18 strands of fiber lockstitched together. They have a very smooth surface with a firm, round cross section that holds its shape under loads.

POLYPROPYLENE MULTIFILAMENT PROLINE



This is inexpensive line that offers the same look as nylon for much less money. The multifilament polypropylene fibers hold a knot better than monofilaments. Its round

Size No.	Dia. In.	RWL* Lbs.	Put up FT.	Unit Wt. Lbs.
4	1/8	16	1000 Spool	3.0
5	5/32	49	1000 Spool	6.5
* 6	3/16	75	1000 Spool	7.5
* 8	1/4	120	1000 Spool	13.5
* 10	5/16	137	1000 Spool	18.5
* 12	3/8	222	500 Spool	12.5
			1000 Spool	25.5
* 16	1/2	370	500 Spool	22.5
			1000 Spool	46.0

construction makes it a good rope for use in pulleys. Because it floats, it is often used as a throw line for water rescue devices. Pro-Line is resistant to rot, mildew, petroleum products and most chemicals.

* standard stock item

Samsel P/N

CDG 465 3/8 CDG 466 3/16
 CDG 467 1/2 CDG 472 5/16
 CDG 484 1/4 ALL 1000 Ft length

BRAIDED ROPES/SOLID BRAID COTTON SASH CORD

(Clothesline)

This is a standard sash cord manufactured to remain round and firm in use. Due to the moderate price, it remains a top seller in cordage. Most often used for window sash, hand line, general purpose.

Size No.	Dis. In.	RWL* Lbs.	Put up FT.	Unit Wt. Lbs.	Samsel P/N	Standard stock items
6	3/16	42	50 Hank	1	CDG 028	100H NK #6
			100 Hank	15	CDG 051	1200CL #6
7	7/32	46	50 Hank	1	CDG 031	100H NK #7
			100 Hank	15	CDG 032	1200CL #7
8	1/4	49	100 Hank	2	CDG 036	50 HNK #8
			1200 Coil	19	CDG 066	100H NK #8
9	9/32	53	100 Hank	2	CDG 056	1200CL #8
			1200 Coil	23	CDG 038	100H NK #9
10	5/16	68	100 Hank	3	CDG 041	50 HNK #10
			1200 Coil	30	CDG 071	100H NK #10
12	3/8	95	100 Hank	4	CDG 061	1200CL #10
			1200 Coil	48	CDG 046	50 HNK #12
16	1/2	180	100 Hank	5	CDG 076	100H NK #12
			1200 Coil	62	CDG 077	1200CL #12
					CDG 079	100H NK #16
					CDG 080	1200CL #16

SOLID BRAID DACRON CORD

Solid braids have a very smooth surface with a firm, round cross section that holds its shape under load. Dacron is DuPont's trade name for their superior polyester fiber. Much less elastic than nylon with a lower tensile strength. Not effected by common alkalies or acids. Excellent weathering characteristics on exposure to sunlight.

CAUTION

Due to the wide range of rope uses, conditions, risk situation and other factors affecting performance, it is impossible to make working load recommendations that apply to all situations. However, for purposes of providing a guideline only.

ALWAYS use extreme caution where personal safety is involved.

TO INSURE YOUR SAFETY

BRAIDED ROPES/HOLLOW BRAID

A braided rope construction of either plain or twill braid. The center is hollow. On the surface all strands are inclined to the axis.

Hollow braided, monofilament polypropylene, is a highly versatile, economical, easy to splice, strong rope that can float.



POLYPROPYLENE HOLLOW BRAID

Samsel P/N	Color	Rope NO.	Dia/ Length	Approximate New Rope Tensile Strength (lbs.)	Maximum Recommended Working Load (lbs.)
CDG 161 CDG 162	YLW YLW	#4 #4	1/8x3000 1/8x1000	250	50
CDG 165 CDG 166 CDG 167	YLW YLW YLW	#6 #6 #6 *	3/16x1000 3/16x3000 3/16x1000	750	160
CDG 171	YLW	#8	1/4x1000	1150	250
CDG 176	YLW	#10	5/16x1000	1800	325
CDG 181 CDG 182 CDG 183	YLW YLW YLW	#12 #12 #12 *	3/8x500 3/8x1000 3/8x1000	2100	440
CDG 186	YLW.	#16	1/2x500	3500	700
CDG 197	YLW	#20 *	5/8x1000	4000	800

Hollow Braided Nylon Carrier

All Carrier ropes are unsurpassed for flexibility, maximum abrasion resistance, easily spliced, heat resistance and, most important, extremely low elongation or stretch.

CDG 557 HB 3/8x2000 * = PREMIUM GRADE

CALL
FOR SPECIFICATIONS AND TECHNICAL INFORMATION
ON SAFETY AND CARE OF ROPE.

DIAMOND BRAIDED

Nylon Carrier

A carrier diamond braided nylon jacket with a strong synthetic wire that is less costly than a solid braid. It has good resistance to abrasion, U.V. break down, and most chemicals. Often used for Starter Rope, Lacing, Venetian Blinds, Woven Blinds. Curtains and shades.

Size No.	Dia. In.	DWL Lbs.
4	1/8	63
4-1/2	9/64	78
5	5/32	90
5-1/2	11/64	118
6	3/16	135
7	7/32	145
8	1/4	213
10	5/16	355
12	3/8	470

WIRE CENTER

Cotton/Bronze Wire

Mahogany Bronze is a standard sash cord construction with a cotton jacket over a bronze wire center for low stretch and cut resistance. Also known as Maypole or Wire Center Diamond Braid. Often used for Flag Pole Halyards, Stage Curtains

Size No.	Dia. In.	RWL* Lbs.	Put up FT.	Unit Wt. Lbs.
Natural				
* 8	1/4	56	1000 Coil	27
* 10	5/16	98	1000 Coil	47
* 12	3/8	120	1000 Coil	55
Mahogany				
8	1/4	56	1000 Coil	28
* 10	5/16	98	1000 Coil	49
* 12	3/8	120	1000 Coil	57



* standard stock items with product numbers.

Samsel P/N White

1/8x1000 CDG 641 3/16x1000 CDG 206 5/16x1000 CDG 221

3/8x1000 CDG 225

Mahogany

1/4x500 CDG 214 1/4x1000 CDG 211 5/16x100 CDG 216

3/8x1000 CDG 226 1/8x1000 CDG 641 3/16x1000 CDG 206

Size Selection Table

Boat Length	Dock Line	Anchor Line*	Mooring Pendant**	
up to 20'	3/8"	3/8"	1/2"	* Anchor line length should be 8 x the water depth.
25-30'	7/16"	1/2"	5/8"	
30-35'	1/2"	1/2"	3/4"	
35-40'	1/2"	5/8"	7/8"	
40-50'	5/8"	3/4"	1"	** Only 3 strand nylon should be used for mooring pendants.

Average strengths are for new rope tested under laboratory conditions. Minimum safety factor 10:1 should be employed in determining proper size. Use recommended working loads

3 STRAND POLYESTER FILAMENT

Made in the same yacht lay construction as Spun Polyester, this rope is manufactured from continuous filament Polyester fiber. It has excellent resistance to abrasion, the lowest stretch among the three-strand ropes, and a strength similar to Nylon, But with about 20% more weight.

Easily eye or tail-spliced to wire, filament Polyester is recommended for halyards and sail control lines where minimal stretch is desired.

Samsel P/N	Std. Dia./ Length	Avg. Tensile Strength*
CDG 231	1/4x600	2000
CDG 232	1/4x1200	
CDG 246	5/16x600	3000
CDG 237	5/16x1200	
CDG 242	3/8x1200	4400
CDG 243	3/8x1200	Firmlay
CDG 253	1/2x600	
CDG 252	1/2x1200	7500
CDG 256	5/8x600	11,700
CDG 257	5/8x1200	
CDG 261	3/4x600	14,700
CDG 262	3/4x1200	
CDG 266	1x600	
CDG 267	1x1200	
CDG 271	1-1/4x600	

* Average strengths are for new rope tested under laboratory conditions. Minimum safety factor 10:1 should be employed in determining proper size. Recommended working loads are available upon request

3 Strand Polyester Filament can also be ordered in a firmlay. Call for more information.

3 STRAND COMBINATION BULL ROPE

The Multiline outperforms all others as a long wearing, easy handling line for lowering limbs and equipment. A composite rope with a polypropylene core in the center of each strand securely wrapped with cover yarns of 100% polyester. Very low working elasticity and excellent rendering capability on winches affords complete load control. High strength weight ratio (75% stronger and 25% lighter than manila) permits greater safety and less weight to handle. Identified by two colored surface yarn markers in one strand.

Samsel P/N	Dia./ Std.Length	Bowline Avg. Strength	Tensile Strength
CDG 597	1/2x1200	3100	5200
CDG 601	5/8x1200	4500	7500
CDG 606	3/4x1200	5900	9800
CDG 607	7/8x1200	9300	15500
CDG 609	1 x1200	11200	18700

3 STRAND SYNTHETIC BLENDED ROPES

These blends provide the high strength at an economical rate. Blends also have low elasticity excellent friction and heat abrasion resistance. Resistant to acids, alkalis, and marine growth. Call for more information.

CDG 681 1-1/2x600
CDG 682 2x600

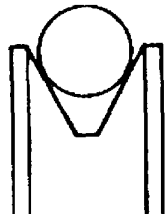
3 STRAND/BRAIDED ROPES POLY-DACRON COMBINATION ROPE

This blend has excellent resistance to wear, lightweight, has good loading characteristics, and excellent resistances to solvents and alkalis. Talk to one of our experienced sales personnel to aid in solving your needs.

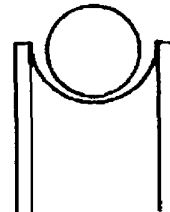
P/D 10 " 3/8" - 1" P/D 11 " 1 1/8" - 4"				P/D 100 "				Multiplex** (Staple Wrap Polyester)				Size (Inches)	
Pounds/ 100 feet	Feet/ Pound	New Rope Tensile Strength (Lb.)*	Working Load (Lb.)*	Pounds/ 100 feet	Feet/ Pound	New Rope Tensile Strength (Lb.)*	Working Load (Lb.)*	Pounds/ 100 feet	Feet/ Pound	New Rope Tensile Strength (Lb.)*	Working Load (Lb.)*	Dia.	Cir.
—	—	—	—	—	—	—	—	1.87	53.5	2,200	220	3/16	5/8
—	—	—	—	—	—	—	—	3.14	31.8	2,900	290	5/16	1
3.8	26.3	3,000	300	2.8	35.7	2,600	260	3.62	26.2	4,300	430	3/8	1-1/8
4.7	21.3	3,900	433	—	—	—	—	5.11	19.6	5,600	622	7/16	1-1/4
6.5	15.4	5,000	556	5.2	19.2	4,200	467	6.46	15.5	6,900	777	1/2	1-1/2
8.0	12.5	5,600	725	—	—	—	—	9.13	10.95	8,500	1,063	9/16	1-3/4
9.6	10.4	7,500	938	11.0	9.1	7,400	925	11.9	8.40	10,000	1,250	5/8	2
12.7	7.87	9,500	1,357	14.0	7.14	10,000	1,429	14.6	6.85	13,000	1,857	3/4	2-1/4
—	—	—	—	—	—	—	—	—	—	—	—	13/16	2-1/2
18.5	5.41	12,500	1,786	19.3	5.18	14,000	2,000	20.1	4.96	18,000	2,571	7/8	2-3/4
22.5	4.44	16,500	2,357	23.5	4.26	18,000	2,571	24.5	4.06	20,000	2,857	1	3
—	—	—	—	—	—	—	—	28.4	3.52	27,000	3,857	1-1/16	3-1/4
29.2	3.42	21,000	3,000	30.5	3.26	21,500	3,071	32.6	3.07	30,000	4,286	1-1/8	3-1/2
32.0	3.13	22,400	3,200	39.0	2.56	25,000	3,571	38.9	2.71	32,000	4,571	1-1/4	3-3/4
36.2	2.76	27,000	3,857	44.0	2.27	27,000	3,857	39.8	2.51	36,000	5,143	1-5/16	4
47.2	2.12	34,000	4,867	55.0	1.82	36,000	5,143	55.0	1.82	54,000	7,714	1-1/2	4-1/2
52.8	1.89	41,000	5,867	—	—	—	—	P/D 101 "				1-5/8	5
66.2	1.51	45,600	5,514	—	—	—	—	P/D 101 "				1-3/4	5-1/2
78.5	1.26	53,600	7,686	85.0	1.18	60,000	8,571	P/D 101 "				2	6
89.3	1.12	61,000	8,714	—	—	—	—	—	—	—	—	2-1/8	6-1/2
103	0.97	71,000	10,143	120	0.83	73,000	10,714	—	—	—	—	2-1/4	7
120	0.83	80,000	11,429	140	0.71	90,000	12,857	110	0.91	95,000	13,571	2-1/2	7-1/2
135	0.74	90,000	12,857	160	0.63	100,000	14,286	135	0.74	115,000	16,429	2-5/8	8
157	0.64	110,000	15,714	—	—	—	—	150	0.67	130,000	18,571	2-7/8	8-1/2
174	0.57	120,000	17,143	185	0.51	117,000	16,714	168	0.60	145,000	20,714	3	9
218	0.46	135,000	19,286	—	—	—	—	200	0.50	172,000	24,571	3-1/4	10
245	0.41	153,000	21,857	—	—	—	—	242	0.41	215,000	30,714	3-1/2	11
—	—	—	—	—	—	—	—	280	0.36	242,000	34,571	4	12
—	—	—	—	—	—	—	—	340	0.29	293,000	41,857	4-1/4	13
—	—	—	—	—	—	—	—	485	0.21	415,000	58,286	4-5/8	14
—	—	—	—	—	—	—	—	—	—	—	—	5	15

DO NOT USE WIRE ROPE OR V BELT SHEAVES FOR SYNTHETIC ROPE AS ROPE IS PINCHED INSIDE.

NO



YES



3 STRAND NYLON ROPE

Nylon is the strongest rope fiber in general use today. In addition, it has elasticity that absorbs sudden shock loads that could snap ropes made of other fibers, or cause damage. Nylon has excellent resis-



tance to abrasion, far superior to that of natural fiber ropes. Nylon is rot resistant and not damaged by oil, grease, gasoline, mildew, marine growth or most chemicals. It can be stowed wet without damage to its fibers. 3-strand twisted nylon is spliceable.

Samsel P/N	Size Dia. Std. Length
CDG 391	3/16x600
CDG 393	3/16x1200
CDG 396	1/4x600
CDG 397	1/4x1200
CDG 401	5/16x600
CDG 402	5/16x1200
CDG 406	3/8x600
CDG 407	3/8x1200
CDG 411	1/2x600
CDG 412	1/2x1200
CDG 416	5/8x600
CDG 417	5/8x1200
CDG 421	3/4x600
CDG 422	3/4x1200
CDG 426	7/8x600
CDG 427	7/8x1200
CDG 431	1x600
CDG 432	1x1200
CDG 436	1-1/4x600
CDG 437	1-1/4x1200
CDG 441	1-1/2x600
CDG 442	1-1/2x1200
CDG 446	1-3/4x600
CDG 447	1-3/4x1200
CDG 451	2x600
CDG 452	2x1200
CDG 453	2-1/4x600
CDG 456	2-1/4x1200
CDG 455	2-1/2x600
CDG 454	2-1/2x1200
CDG 458	2-5/8x600
CDG 459	2-5/8x1200
CDG 4590	3
CDG 460	3-1/4

CORDAGE INSTITUTE ROPE SPECIFICATIONS

Three-Strand Laid and Eight-Strand Plaited
(Standard Construction)

NOMINAL SIZE		NYLON			
Diameter	Circumference	Linear Density (lbs./100 ft.)	New Rope Tensile Strength (lbs.)	Safety Factor	Working Load (lbs.)
3/16	5/8	1.00	900	12	75
1/4	3/4	1.50	1,480	12	124
5/16	1	2.50	2,300	12	192
3/8	1-1/8	3.50	3,340	12	278
7/16	1-1/4	5.00	4,500	11	410
1/2	1-1/2	6.50	5,750	11	525
9/16	1-3/4	8.15	7,200	10	720
5/8	2	10.5	9,350	10	935
3/4	2-1/4	14.5	12,800	9	1,420
13/16	2-1/2	17.0	15,300	9	1,700
7/8	2-3/4	20.0	18,000	9	2,000
1	3	26.4	22,800	9	2,520
1-1/16	3-1/4	29.0	26,000	9	2,880
1-1/8	3-1/2	34.0	29,800	9	3,320
1-1/4	3-3/4	40.0	33,800	9	3,780
1-5/16	4	45.0	38,800	9	4,320
1-1/2	4-1/2	55.0	47,800	9	5,320
1-5/8	5	66.5	58,500	9	6,500
1-3/4	5-1/2	83.0	70,000	9	7,800
2	6	95.0	83,000	9	9,200
2-1/8	6-1/2	109.	95,500	9	10,800
2-1/4	7	129.	113,000	9	12,800
2-1/2	7-1/2	149.	128,000	9	14,000
2-5/8	8	168.	146,000	9	16,200
2-7/8	8-1/2	189.	162,000	9	18,000
3	9	210.	180,000	9	20,000
3-1/4	10	264.	226,000	9	25,200
3-1/2	11	312.	270,000	9	30,000
4	12	380.	324,000	9	36,000

CAUTION: Because of the wide range of rope use, rope condition, exposure to the several factors affecting rope behavior, and the degree of risk to life and property involved, it is impossible to make blanket recommendations as to working loads. However, to provide guidelines, working loads are tabulated for rope in good condition with appropriate splices in non-critical applications and under normal service conditions.

3 STRAND POLYPROPYLENE ROPES

Samsel P/N	Size Dia. Std. Length	Color
CDG 461	3/16x600	YLW
CDG 462	3/16x1000	YLW
CDG 463	3/16x3600	YLW
CDG 4631	3/16x5000	YLW
CDG 471	1/4x600	YLW
CDG 473	1/4x1200	YLW
CDG 364	1/4x1200	WHT
CDG 474	1/4x1200	BLK
CDG 4740	1/4x2400	YLW
CDG 4742	1/4x5000	YLW
CDG 476	5/16x600	YLW
CDG 478	5/16x1200	YLW
CDG 4781	5/16x5000	YLW
CDG 481	3/8x600	YLW
CDG 482	3/8x600	BLU/WHT
CDG 483	3/8x1200	YLW
CDG 485	3/8x600	BLK
CDG 486	3/8x1200	BLK
CDG 491	1/2x600	YLW
CDG 493	1/2x1200	YLW
CDG 494	1/2x1600	BLK
CDG 496	5/8x600	YLW
CDG 498	5/8x1200	YLW
CDG 501	3/4x600	YLW
CDG 503	3/4x1200	YLW
CDG 506	7/8x600	YLW
CDG 508	7/8x1200	YLW
CDG 511	1x600	YLW
CDG 513	1x1200	YLW
CDG 516	1-1/4x600	YLW
CDG 518	1-1/4x1200	YLW
CDG 521	1-1/2x600	YLW
CDG 523	1-1/2x1200	YLW
CDG 526	1-3/4x600	YLW
CDG 528	1-3/4x1200	YLW
CDG 531	2x600	YLW
CDG 533	2x1200	YLW
CDG 535	2-1/2x1200	YLW

The lightest and least expensive of all synthetics, it floats indefinitely on salt water. Highly resistant to chemicals and low elasticity. Should be limited to non-critical usage as exposure to sunlight reduces its strength. Recommended for heaving lines and waterski tow rope.



CORDAGE INSTITUTE ROPE SPECIFICATIONS

Three-Strand Laid and Eight-Strand Plaited (Standard Construction)

NOMINAL SIZE		POLYPROPYLENE			
Diameter	Circumference	Linear Density (lbs/100 ft)	New Rope Tensile Strength (lbs.)	Safety Factor	Working Load (lbs.)
3/16	5/8	.70	720	10	72
1/4	3/4	1.20	1,130	10	113
5/16	1	1.80	1,710	10	171
3/8	1-1/8	2.80	2,440	10	244
7/16	1-1/4	3.80	3,160	9	352
1/2	1-1/2	4.70	3,780	9	420
9/16	1-3/4	6.10	4,800	8	575
5/8	2	7.50	5,800	8	700
3/4	2-1/4	10.7	7,650	7	1,080
13/16	2-1/2	12.7	8,900	7	1,270
7/8	2-3/4	15.0	10,400	7	1,490
1	3	18.0	12,600	7	1,800
1-1/16	3-1/4	20.4	14,400	7	2,060
1-1/8	3-1/2	23.8	16,500	7	2,380
1-1/4	3-3/4	27.0	18,900	7	2,700
1-5/16	4	30.4	21,200	7	3,020
1-1/2	4-1/2	38.4	26,800	7	3,820
1-5/8	5	47.8	32,400	7	4,620
1-3/4	5-1/2	59.0	38,800	7	5,550
2	6	69.0	46,800	7	6,700
2-1/8	6-1/2	80.0	55,000	7	7,850
2-1/4	7	92.0	62,000	7	8,850
2-1/2	7-1/2	107.	72,000	7	10,300
2-5/8	8	120.	81,000	7	11,600
2-7/8	8-1/2	137.	91,000	7	13,000
3	9	153.	103,000	7	14,700
3-1/4	10	180.	123,000	7	17,600
3-1/2	11	232.	146,000	7	20,800
4	12	276.	171,000	7	24,400

CAUTION: Because of the wide range of rope use, rope condition, exposure to the several factors affecting rope behavior, and the degree of risk to life and property involved, it is impossible to make blanket recommendations as to working loads. However, to provide guidelines, working loads are tabulated for rope in good condition with appropriate splices in non-critical applications and under normal service conditions. A higher working load may be selected only with expert knowledge of conditions and professional estimates of risk.

3 STRAND TAN POLYPROPYLENE ROPES

Polypropylene Landscaping Rope

Stronger, lighter, and less cost are the comparisons to natural fiber manila rope. This fibrillated film rope with a special process to give the look, feel, and knot holding ability of manila rope. This rope is resistant to rot, mildew, petroleum products, and most chemicals.



Samsel P/N	Std. Dia./ Length	Recommended Working Load
CDG 296	1/4x600	96
CDG 297	1/4x1200	96
CDG 298	5/16x1200	144
CDG 3120	3/8x600	200
CDG 312	3/8x1200	200
CDG 321	1/2x600	360
CDG 322	1/2x1200	360
CDG 324	5/8x1200	625
CDG 325	5/8x600	625
CDG 327	3/4x600	870
CDG 329	1x600	1220

Landscaping Filament Rope

CDG 359 1-1/2
Manila in color
CDG 370 2"
Manila in color
CDG 357 1-1/4

POLYPROPYLENE SAFETY ROPE

(Ski Tow Rope) This is a safety rope commonly used for Snow Ski tow ropes that have to be one continuous length. Polypropylene is light-weight with good strength. It's resistant to rot, waterproof, oils, gasoline, most chemicals and can endure the outdoor elements

CDG 666 SKI BLU 1x1200
CDG 671 SKI BLK 1x1200

BENDS/SHEAVE SIZES

Sharp bends significantly reduce rope strength. A working rope should never be subjected to a bend of less than 3 times rope diameter and a bend ratio of 4 times, or more, will prolong rope life. Eye-splice length should be at least 3 times the diameter of the cylinder (bitt, etc.) over which the eye is used. A length of 5 times diameter is even better.

Sheave diameter should be 8 times braided rope diameter and 10 times twisted rope diameter. Sheave groove must be wider than rope diameter. Never use wire rope or V-belt sheaves because they pinch fiber ropes and cause excessive friction and damage.



"Never allow anyone to stand in line with or within 45° on either side of a rope under tension. Should the rope fail or other parts of the assembly fail, the recoil force could cause serious injury or damage, especially if the rope is nylon."

3 STRAND BLENDED ROPES

Leaving Lines

In many instances the towboat captain must leave barges in areas where he or his company have no control. He may elect not to utilize brand new, high grade rope for tie-up. Many captains have used manila or sisal for this purpose since the rope could be left behind.

Random line is made in limited diameters, these 3 strand ropes are made from random yarns of polypropylene, nylon and polyester and could be variegated color and have no "reported" standard tensile strengths. Less expensive Random Leave Line is often considered more suitable as a disposable rope than manila, sisal or standard ropes.

CAUTION: Use of Working Loads- Because of the wide range of rope use, rope condition exposure to the several factors affecting rope behavior, and the degree of risk to life and property involved, it is impossible to make blanket recommendations as to working loads.

NOT recommended for lifting or where personal or property safety is involved.

CDG 367 1-1/2x600 CDG 369 2x600

POLYSTEEL® ROPE



The Lowest Cost Per Pound of Tensile Strength of Any Synthetic Rope

More Strength ... Less Stretch

Stronger than mono-filament Polypropylene & Polyethylene Rope

- over 40% higher tensile strength
- higher abrasion resistance
- less stretch, nearest to natural fiber

Lighter than Nylon Rope

- approximate strength of nylon rope
- 20%-30% less weight
- less stretch

Soft/Durable/Not Slippery

- develops a soft silky "hand" with use
- extremely UV resistant
- will not harden with age

Excellent for Shipping & Commercial Fishing Uses

- no loss of strength when wet
- picks up very little water
- resists rot and mildew
- stores wet
- floats

POLYSTEEL® is made in Canada from filaments extruded by East Coast Rope Ltd. with a specific gravity of 0.94 and a stretching elongation of 16-18%.

POLYSTEEL® fibers have 7.5 grams per denier, the highest grams per denier of any fibers commonly used in the manufacture of polypropylene or polyethylene rope, making POLYSTEEL® the strongest synthetic rope for its class.

Specifications/Three Strand Rope

Size (Dia.)	POLYSTEEL®		Polypropylene	
	Approx. Weight of 1200 ft Coil (Lbs)	Tensile Strength (Lbf)	Approx. Weight of 1200 ft Coil (Lbs)	Tensile Strength (Lbf)
6 mm / 1/4 inches	14	1,650	15	1,011
8 mm / 5/16 inches	22	2,820	22	1,483
10 mm / 3/8 inches	37	4,330	35	2,248
12 mm / 1/2 inches	57	5,100	57	3,372
14 mm / 9/16 inches	77	6,360	73	4,496
16 mm / 5/8 inches	91	10,640	91	5,395
18 mm / 3/4 inches	132	13,570	141	7,982
20 mm / 13/16 inches	157	15,380	152	8,900
22 mm / 7/8 inches	190	18,780	182	10,116
24 mm / 1 inches	220	21,730	230	12,589
26 mm / 1-1/16 inches	249	26,270	245	14,400
28 mm / 1-1/8 inches	293	29,000	286	15,286
30 mm / 1-1/4 inches	337	33,050	324	18,434
32 mm / 1-5/16 inches	373	37,810	365	21,200
36 mm / 1-1/2 inches	476	47,560	500	26,876
40 mm / 1-5/8 inches	586	58,910	610	31,473
Safe Working Load		18%	15%	

Tensile strengths are averages for new ropes tested under laboratory conditions and may vary by 10%. Weights are average and may vary by 5%. Polypropylene specifications are based on the closest equivalent Canadian Standards (40-GP-13M).

POLYSTEEL® Plus — CDG 1494

"Accu-Throw Heaving Line"

3/8" x 1200 feet / 9mm x 366 meters

Average Tensile Strength — 4,100 Lbf.

Safe Working Load — 738 Lbf.



⚠ Caution — Lead Core ⚠

Manufactured for: Samsel Supply Co. • Cleveland, Ohio • USA 44113

by: *Er* East Coast Rope Ltd. • North Sydney, Nova Scotia • CAN B2A 3M3

KARAT HEAVING LINES

EStalon fiber is the result of many years' intensive research and development. Its highly sophisticated formulization combines a specially extruded blend of polyester and polypropylene synthetic. This EStalon split-film yarn results in a rope with remarkable strength to weight qualities—far stronger and lighter than standard monofilament or split-film polypropylene, or polyester/polypropylene blends.

KARAT rope is made from EStalon, of course, the great advantage of KARAT rope's exceptional strength is the ability in some cases to safely downsize diameters—making working lines far lighter and easier to handle.

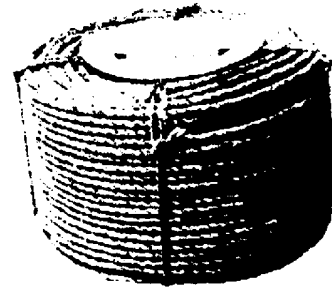
It will not lose strength when wet, unlike conventional nylon ropes. It is even unaffected by low temperatures and easy to work with in cold weather.

CDG 684 3/8"

Dia. Inches	Cir. Inches	Approx. Wt./100 Ft.	Average Break Strength Lb.
3/16	5/8	.89	1170
1/4	3/4	1.26	1760
5/16	1	2.31	2930
3/8	1 1/8	3.57	4370
7/16	1 1/4	4.30	5130
1/2	1 1/2	5.15	6500
9/16	1 3/4	7.07	8550
5/8	2	9.03	11,500
3/4	2 1/4	12.85	13,700
7/8	2 3/4	17.12	20,500
1	3	24.05	25,000
1 1/4	3 3/4	35.7	38,000
1 1/2	4 1/2	43.5	47,500
1 5/8	5	53.3	61,800
1 3/4	5 1/2	64.0	73,600
2	6	76.0	86,500
2 1/4	7	103.5	115,200
2 1/2	7 1/2	118.8	131,400
2 5/8	8	135.3	147,600
3	9	171.2	185,400
4	12	304.4	321,300

3 STRAND TWISTED/MANILA ROPE

Manila is the strongest natural fiber. This rope may absorb water up to 100 percent of its weight even though it is specially lubricated to reduce water absorption and thus increase useful life. It has very little stretch compared with synthetic ropes and has excellent rendering qualities--ability to ease out smoothly under load over bits. It also offers good external and internal wear resistance combined with



easy handling and economy. Limited elongation. Lubricated to repel moisture, but susceptible to rot and chemical attack. An economical 3-strand rope for general purpose applications. Natural color. Working load limits are based on approximately 10 to 14 percent of new rope breaking strength.

CORDAGE INSTITUTE ROPE SPECIFICATIONS

Three-Strand Laid and Eight-Strand Plaited
(Standard Construction)

Samsel P/N	Size Dia. Std. Length
CDG 301	1/4x600
CDG 302	1/4x1200
CDG 306	5/16x600
CDG 307	5/16x860
CDG 309	5/16x1200
CDG 316	3/8x600
CDG 318	3/8x1200
CDG 319	7/16x1200 Hrd Lay
CDG 326	1/2x600
CDG 328	1/2x1200
CDG 336	5/8x600
CDG 338	5/8x1200
CDG 346	3/4x600
CDG 348	3/4x1200
CDG 389	3/4x1200 Left Lay
CDG 351	7/8x600
CDG 353	7/8x1200
CDG 356	1x600
CDG 358	1x1200
CDG 390	1x600 Left Lay
CDG 361	1-1/4x600
CDG 363	1-1/4x1200
CDG 366	1-1/2x600
CDG 368	1-1/2x1200
CDG 371	2x600
CDG 372	2x1200
CDG 373	2-1/2x1200
CDG 376	2-1/2x600
CDG 381	3x600

NOMINAL SIZE		MANILA			
Diameter	Circumference	Linear Density (lbs./100 ft.)	New Rope Tensile Strength (lbs.)	Safety Factor	Working Load (lbs.)
3/16	5/8	1.50	406	10	41
1/4	3/4	2.00	540	10	54
5/16	1	2.90	900	10	90
3/8	1-1/8	4.10	1,220	10	122
7/16	1-1/4	5.25	1,580	9	176
1/2	1-1/2	7.50	2,380	9	264
9/16	1-3/4	10.4	3,100	8	388
5/8	2	13.3	3,960	8	498
3/4	2-1/4	18.7	4,860	7	695
13/16	2-1/2	19.5	5,850	7	835
7/8	2-3/4	22.4	6,950	7	995
1	3	27.0	8,100	7	1,160
1-1/16	3-1/4	31.2	9,450	7	1,350
1-1/8	3-1/2	36.0	10,800	7	1,540
1-1/4	3-3/4	41.8	12,200	7	1,740
1-5/16	4	47.8	13,500	7	1,930
1-1/2	4-1/2	60.0	16,700	7	2,380
1-5/8	5	74.5	20,200	7	2,880
1-3/4	5-1/2	89.5	23,800	7	3,400
2	6	108.	28,000	7	4,000
2-1/8	6-1/2	125.	32,400	7	4,620
2-1/4	7	146.	37,000	7	5,300
2-1/2	7-1/2	167.	41,800	7	5,950
2-5/8	8	191.	46,800	7	6,700
2-7/8	8-1/2	215.	52,000	7	7,450
3	9	242.	57,500	7	8,200
3-1/4	10	298.	69,500	7	9,950
3-1/2	11	366.	82,000	7	11,700
4	12	434.	94,500	7	13,500

CAUTION: Because of the range of rope use, rope condition, exposure to the several factors affecting rope behavior, and the degree of risk to life and property involved, it is impossible to make blanket recommendations as to working loads. Higher working load may be selected only with expert knowledge and professional estimates of risk.

TWISTED/MANILA SPECIALTY ROPES

4 Strand Manila Rope

This is a special commercial rope usually used in the drilling and fishing industry. Call to find out more information.

CDG 339 5/8x1200

CDG 387 WXD 3/4x600

CDG 386 3/4x600

CDG 388 3/4x1200

9 STRAND CABLE LAID

The 9 Strand Cable Laid Manila rope is a specialty rope. Most often used on pulleys in a contained space. The 9 Strand has less tendency to kink or separate. Limited elongation and moves smoothly under load.

CDG 349 3/4x600

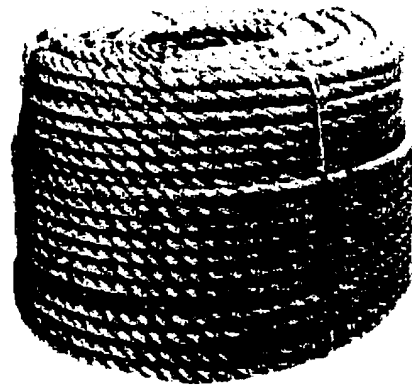
Trans Line

This rope has many of the same characteristics of the 9 Strand Cable Laid rope. As a natural fiber very little stretch under load and ability to ease out smoothly under load. Call for more information.

CDG 350 3/4x1200

SISAL ROPE

A low cost natural fiber rope, one of the most economical of all ropes especially in uses where high strength is of minor importance. The rough texture of sisal is made from fibers of either the henequen or sisalana plant. The twisted 3-strand knots well and provides a firm grip.



3 STRAND SISAL ROPE

Samsel P/N	Size Dia. Std. Length	New Rope Tensile Strength (Lbs.)	Recommended Working Load (Lbs)
CDG 538	1/4x2500 ¹	480	48
CDG 541	5/16x1650	790	75
CDG 543	5/16x1720		
CDG 547	3/8x1200	1080	108
CDG 551	1/2x600	2120	236
CDG 553	5/8x750	3475	350
Larger sizes available up to 2"			

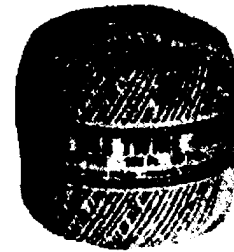
TWINE

Twine is never recommended for use where life, limb, and / or valuable property are involved.

SISAL TWINE

Made from natural fibers, low in cost and resistant to sunlight.

Samsel P/N	Yarn Ply	Approx Unit Wt.	Nominal Tensile Strength
CDG 559	1 PLY	10Lbs.	197
CDG 560	1 PLY	50Lbs.	197
CDG 562	2 PLY	10Lbs.	350
CDG 563	2 PLY	50Lbs.	350
CDG 564	3 PLY	30Lbs.	510
CDG 565	3 PLY	10Lbs.	510
CDG 575	3 PLY	50Lbs.	510

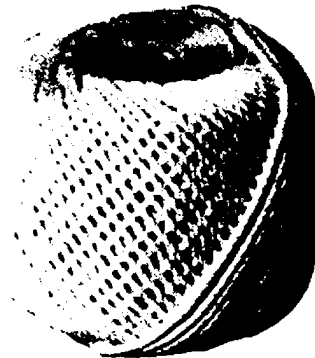


COTTON TWINE

This an economical twine made from spun cotton yarns. Cotton twine unlimited general purpose applications.

SPECIFICATIONS

Twine Size No.	Approx. Diameter Inches	Approx. Feet Per Pound	Approx. Break Test Pounds
6	.031	1830	15
12	.046	1075	25
15	.051	860	30
18	.058	715	35
21	.065	615	40
24	.073	535	50
27	.075	485	55
30	.078	430	60
36	.085	360	70
42	.093	305	85
48	.103	270	95
54	.109	240	110
60	.116	215	120
72	.125	180	155
84	.135	175	185
96	.158	135	200
120	.170	105	235



Sold in the 8oz. balls

Sizes	12	18*	21	24
	27	36	48	60

* standard stock item
 CDG 577 18 1lb. ball

NYLON TWINE (Seine)

Nylon twine is a superior grade of twine of even diameter and strength. It is made from continuous length of 100% nylon fiber running the entire length of the twine. Being resistant to abrasion, rot, oil, grease, gasoline, mildew, marine growth and most chemicals assures a longer life than cotton twine.



SPECIFICATIONS

Samsel P/N	Ptu-up	Size No.
CDG 568	1/4# Ball	9
CDG 569	1/4# Ball	12
CDG 570	1/2# Ball	15
CDG 572	1# Ball	18
CDG 573	1/2# Ball	18
CDG 574	1/2# Ball	21
CDG 578	1# Ball	24
CDG 579	1# Ball	30
CDG 580	1# Ball	36
CDG 594	1# Ball	21
CDG 583	1# Ball	48
CDG 585	1# Ball	60
CDG 589	1# Ball	72

Twine Size No.	Approx. Diameter Inches	*Approx. Feet Per Pound	Approx. Break Test Pounds
210/2	.010	31,270	7
89	.012	20,635	1
104	.014	13,835	14
139(#3)	.017	10,10'	20
208(#4)	.022	6,665	30
277(#5)	.027	4,945	40
346(#6)	.031	3,970	50
415(#7)	.035	3,225	80
9	.042	2,350	80
12	.046	1,890	10
15	.051	1,560	120
18	.058	1,155	180
21	.065	915	200
24	.073	750	240
30	.078	635	280
36	.085	550	320
42	.093	485	360
48	.103	380	440
54	.109	355	480
60	.116	300	560
72	.125	260	640
84	.135	220	760
96	.158	175	920
120	.170	140	1,120

*Note: Dyed and bonded twines yield approx. 7-9% less footage.

MASON NYLON CHALK LINE

A rough braided jacket holds chalk well. Nylon will last longer than cotton and is more resistant to rot and abrasion. Knots and ties easily.

Samsel P/N	Size No.	Dia In.	New rope Tensile
CDG 599	1	1/16x250	70
CDG 600	1	1/16x500	70
CDG 602	2	5/64x250	155
CDG 604	2	5/64x500	155

NYLON LINE

Other special nylon lines are also available call for more information.

MSC 1339	500'	Braid YLW
MSC 671	350'	Twist YLW
MSC 721	250'	W/Wnder YLW

CORDAGE SPECIALITY ROPES OR ACCESSORIES

ARE AVAILABLE

CALL OR FAX US YOUR QUESTIONS

FAX (216) 241-3426