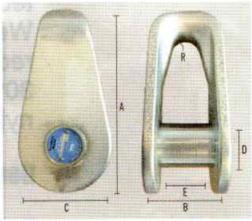
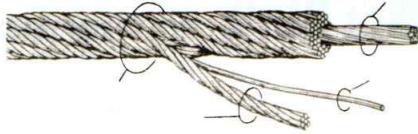
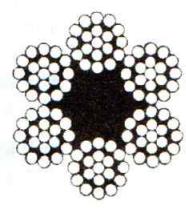


# 21

## Rope & Hawsers

Synthetic Ropes / Mooring Rope  P. 21-1 ~ 21	Mooring Links & Shackles  P. 21-22 ~ 24
Synthetic Miscellaneous Rope  P. 21-24 ~ 27	Steel Wire Rope  P. 21-27 ~ 36
Non Rotating Wire Rope  P. 21-36 ~ 43	Stainless Steel Wire Rope  P. 21-43 ~ 46

### Requirement of Certificate

Please mention on your request for Ropes and Hawsers, if you require a Certificate for each ropes, and specify which type of certificate: Class / Factory / Manufacturer, etc.

## Marine Ropes

Please pay special attention to the following matters when ordering ropes.

1. Breaking strength is a guide line only, based upon the rope size.
2. Specifications are based on tests of new, unused ropes of current manufacture.
3. Once a rope is put into service, it is continuously deteriorating.
4. Manila rope will deteriorate in storage even under ideal conditions.
5. All weights shown in this catalogue are approximate net rope weights.

## 3-Strand Manila Ropes

Cuerda de Manila 3 Cordonnes

三つよりマニラロープ 3 股马尼拉绳

A heavy-duty all purpose rope. It provides the necessary tensile strength for safe operations. When ordering, please indicate the correct circumference or diameter of the rope to avoid misdeliveries.



### How to order: CODE

Manila rope, 3-strand, DIAM x LENGTH

200mtrs Manila Rope				Breaking Strength kN	220mtrs Manila Rope				Unit Per C/L		
CODE	Size		Weight kg/coil		CODE	Size		Weight kg/coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 01 01	1	8	9.40	4.61	21 01 51	1	8	10.34			
02	1-1/8	9	11.89	5.79	52	1-1/8	9	13.08			
03	1-1/4	10	14.68	7.06	53	1-1/4	10	16.15			
04	1-1/2	12	21.14	9.9	54	1-1/2	12	23.22			
05	1-3/4	14	28.77	13.1	55	1-3/4	14	31.65			
21 01 06	2	16	37.58	10.9	21 01 56	2	16	41.34			
07	2-1/4	18	47.56	21.0	57	2-1/4	18	52.32			
08	2-1/2	20	58.72	25.6	58	2-1/2	20	64.59			
09	2-3/4	22	71.05	30.5	59	2-3/4	22	78.16			
10	3	24	84.56	35.9	60	3	24	93.02			
21 01 11	3-1/4	26	99.24	41.6	21 01 61	3-1/4	26	109.16			
12	3-1/2	28	115.10	47.8	62	3-1/2	28	126.61			
13	3-3/4	30	132.12	54.3	63	3-3/4	30	145.33			
14	4	32	144.32	61.2	64	4	32	158.75			

## 3-Strand Polypropylene Mono-Filament Ropes

Cuerda Polipropileno Mono-filamento

3 Cordones

三つよりポリプロモノロープ 三股丙纶绳



A useful rope for the marine field. This light rope, (gravity 1:091 to water) is stronger than a comparable manila rope, is non water absorbent, non slipping, and provides good flexibility and high durability. A manufacturer's certificate can be provided with the rope if required.

### How to order: CODE

Polypro monofilament rope, 3-strand, DIAM x LENGTH

200 mtrs				Breaking Strength kN	220 mtrs				Unit Per C/L		
CODE	Size		Weight kg. coil		CODE	Size		Weight kg. coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 02 01	1	8	6.0	8.53	21 02 51	1	8	6.6			
02	1-1/8	9	7.6	11.8	52	1-1/8	9	8.4			
03	1-1/4	10	9.0	12.8	53	1-1/4	10	9.9			
04	1-1/2	12	13.5	18.4	54	1-1/2	12	14.9			
05	1-3/4	14	18.2	24.6	55	1-3/4	14	20.0			

(to be continued)

21 02 06	2	16	23.8	31.5	21 02 56	2	16	26.2
07	2-1/4	18	30.1	39.1	57	2-1/4	18	33.1
08	2-1/2	20	37.1	47.9	58	2-1/2	20	40.8
09	2-3/4	22	45.0	56.7	59	2-3/4	22	49.5
10	3	24	53.5	66.5	60	3	24	58.9
21 02 11	3-1/4	26	62.7	77.2	21 02 61	3-1/4	26	69.0
12	3-1/2	28	72.8	88.7	62	3-1/2	28	80.1
13	3-3/4	30	83.5	108	63	3-3/4	30	91.9
14	4	32	95.0	127	64	4	32	104.0
15	4-1/4	34	107	142	65	4-1/4	34	118.0
21 02 16	4-1/2	36	120	157	21 02 66	4-1/2	36	132.0
17	4-3/4	38	134	171	67	4-3/4	38	147.0
18	5	40	148	191	68	5	40	163.0

## 3-Strand Nylon Ropes

Cuerda de Nylon 3 Cordonnes

三つよりナイロンロープ 三股尼龙绳



Made of continuous filament while yarn woven into a three strand rope.

The fibres are elastic, moisture proof, and highly abrasion resistant. Standard coil length is 200 or 220 mtr. Ropes of other lengths must be made to order.

### How to order: CODE

Nylon rope, 3-strand, DIAM x LENGTH

200 mtrs				Breaking Strength kN	220 mtrs				Unit Per C/L		
CODE	Size		Weight kg/coil		CODE	Size		Weight kg/coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 05 01	1	8	7.7	14.7	21 05 51	1	8	8.5			
02	1-1/8	9	9.8	17.7	52	1-1/8	9	10.8			
03	1-1/4	10	12.1	21.6	53	1-1/4	10	13.3			
04	1-1/2	12	17.7	29.4	54	1-1/2	12	19.5			
05	1-3/4	14	24.1	39.2	55	1-3/4	14	26.5			
21 05 06	2	16	31.0	50.0	21 05 56	2	16	34.1			
07	2-1/4	18	39.2	61.8	57	2-1/4	18	43.1			
08	2-1/2	20	48.5	75.5	58	2-1/2	20	53.4			
09	2-3/4	22	58.5	90.2	59	2-3/4	22	64.4			
10	3	24	69.9	108	60	3	24	76.9			
21 05 11	3-1/4	26	81.6	123	21 05 61	3-1/4	26	89.8			
12	3-1/2	28	95.9	139	62	3-1/2	28	105			
13	3-3/4	30	109	162	63	3-3/4	30	120			
14	4	32	124	181	64	4	32	136			
15	4-1/4	34	140	206	65	4-1/4	34	154			
21 05 16	4-1/2	36	157	226	21 05 66	4-1/2	36	173			
17	4-3/4	38	175	255	67	4-3/4	38	193			
18	5	40	194	275	68	5	40	213			

## Mooring Ropes

### AMENDMENTS TO SOLAS: SAFE MOORING OF SHIPS

Cuerdas de amarre Enmiendas a solas: amarre seguro de buques

係船索に関する SOLAS 条約の改正

系泊绳索 对《公约》的修正：船舶安全系泊

The Marine Safety Committee approved amendments to SOLAS Regulation II-1/3-8 at MSC.102 and it will come into force for new building ships constructed on or after 1 January 2024. These amendments showed new requirements for mooring arrangement and equipment including lines to be designed with appropriate conditions. It aims to emphasize the importance of proper mooring arrangement design, the selection of suitable mooring equipment and fittings for safe mooring operations.

The amendments to SOLAS Regulation II-1/3-8 refer to an update to MSC.1/Circ.1175/Rev.1 titled "Revised Guidance on Shipboard Towing and Mooring Equipment" and two new Guidelines:

**MSC.1/Circ.1619:** Guideline on the Design of Mooring Arrangements and the Selection of Appropriate Mooring Equipment and Fittings for Safe Mooring, will apply to ships

constructed on or after 1 January 2024 and give an approach to the design of mooring arrangements and selection of mooring equipment and fittings which should be combined with principles of ergonomics and usability.

**MSC.1/Circ.1620:** *Guideline for Inspection and Maintenance of Mooring Equipment Including Lines*, which shows guidance and recommendation for the inspection and maintenance of mooring equipment that is already in service. It includes specific criteria for identifying worn-out lines and tales should be removed from service before failure, and criteria for selection of replacement mooring lines and tails.

#### Definitions (excerpt of MSC.1/Circ.1619 Annex p.1~2)

2.1 Line Design Break Force (LDBF) means the minimum force that a new, dry, spliced, mooring line will break at. This is for all synthetic cordage materials.

2.9 Ship Design Minimum Breaking Load ( $MBL_{SD}$ ) means the minimum breaking load of new, dry, mooring lines for which shipboard fittings and supporting hull structures are designed in order to meet mooring operations.

#### The selection of mooring lines should take into account (excerpt of MSC.1/Circ.1619 Annex p.6)

5.2.3.4 the Line Design Break Force (LDBF) to be 100% to 105% of the  $MBL_{SD}$

5.2.4 To avoid overload on mooring winches, fittings and mooring lines, consideration should be given to select mooring winches with brake capacity of less than the ships design minimum breaking load of the mooring line or with adjustable brake capacity.

#### Load limits (excerpt of MSC.1/Circ.1619 Annex p.7)

5.2.8.4 The WLL of mooring lines should be used as user operating limiting values, not to be exceeded. The WLL is expressed as a percentage of  $MBL_{SD}$  and should be used as a limiting value in operational mooring analyses. Steel wires have a WLL of 55% of  $MBL_{SD}$  and all other cordage(synthetic) have a WLL of 50% of the  $MBL_{SD}$

## 8-Strand Polypropylene Mono-Filament Hawasers

Estacha Polipropileno Mono-Filamento 8 Cordones

八つ打ちポリプロモノホーサー 八股丙纶单丝缆绳

Often called a cross or square rope. Suited well for use as a mooring rope because it does not kink, slip, absorb water, and is easy to handle.

Supplied in standard cut lengths of 200 mtr/110 fathoms or 220 mtr/120 fathoms. Ropes of other lengths must be made to order.

When ordering, please specify whether eyes should be spliced on one or both ends of the rope, and if the eyes should be covered with canvas or leather.

Manufacturers certificate is attached to each rope. Lloyd's, ABS, and NK certificates are available upon request.

#### How to order: CODE

Hawser, polypropylene monofilament, 8-strand, DIAM x LENGTH

Mooring hawsers will be normally supplied with standard size of eye-splice at both ends.

Unit Per C/L									
200 mtrs				Breaking Strength kN	220 mtrs				
CODE	Size		Weight kg/coil		CODE	Size		Weight kg/coil	
	Cir. inch	Diam. mm				Cir. inch	Diam. mm		
21 03 01	6	48	202	277	21 03 51	6	48	222	
02	6-1/4	50	222	296	52	6-1/4	50	244	
03	6-1/2	52	240	321	53	6-1/2	52	264	
04	6-7/8	55	268	355	54	6-7/8	55	295	
05	7	56	276	367	55	7	56	304	
21 03 06	7-1/2	60	323	418	21 03 56	7-1/2	60	355	
07	8	65	360	471	57	8	65	396	
08	8-1/2	68	405	526	58	8-1/2	68	446	
09	8-11/16	70	435	556	59	8-11/16	70	479	
10	9	73	455	600	60	9	73	500	
21 03 11	9-1/4	75	499	632	21 03 61	9-1/4	75	549	
12	9-1/2	77	525	664	62	9-1/2	77	578	
13	9-7/8	80	560	712	63	9-7/8	80	616	
14	10	81	583	728	64	10	81	641	
15	10-1/2	85	641	797	65	10-1/2	85	705	
21 03 16	11-1/8	90	719	886	21 03 66	11-1/8	90	791	
17	11-3/4	95	800	979	67	11-3/4	95	880	
18	12	97	836	1,010	68	12	97	920	
19	12-3/8	100	888	1,079	69	12-3/8	100	977	
20	13	104	967	1,157	70	13	104	1,064	
21 03 21	13-5/8	110	1,084	1,275	21 03 71	13-5/8	110	1,192	
22	14	113	1,144	1,344	72	14	113	1,258	
23	14-7/8	120	1,282	1,500	73	14-7/8	120	1,410	
24	15	121	1,303	1,520	74	15	121	1,433	

## 8-Strand Polypropylene Split-Film Hawasers

Estacha Polipropileno Sprit-Film 8 Cordones Trenzadas

八つ打ちポリプロスプリットフィルムホーサー 八股丙纶复丝大缆绳

Known as a cross braided or square hawser. This rope is unique as a mooring hawser because it does not kink, slip, or absorb water, is durable and easy to handle.

When ordering, please indicate if one or both ends of the rope should be eye spliced and covered with canvas or leather. Also, please specify if a manufacturer's certificate will be required.

#### How to order: CODE

Hawser, polypropylene split-film, 8-strand, DIAM x LENGTH

Unit Per C/L									
200 mtrs				Breaking Strength kN	220 mtrs				
CODE	Size		Weight kg/coil		CODE	Size		Weight kg/coil	
	Cir. inch	Diam. mm				Cir. inch	Diam. mm		
21 04 01	6	48	202	267	21 04 51	6	48	222	
02	6-1/4	50	222	288	52	6-1/4	50	244	
03	6-1/2	52	240	309	53	6-1/2	52	264	
04	6-7/8	55	268	345	54	6-7/8	55	295	
05	7	56	276	353	55	7	56	304	
21 04 06	7-1/2	60	313	404	21 04 56	7-1/2	60	344	
07	8	65	360	457	57	8	65	396	
08	8-1/2	68	406	500	58	8-1/2	68	446	
09	8-11/16	70	435	530	59	8-11/16	70	479	
10	9	73	455	574	60	9	73	500	
21 04 11	9-1/4	75	499	605	21 04 61	9-1/4	75	549	
12	9-1/2	77	524	637	62	9-1/2	77	577	
13	9-7/8	80	560	686	63	9-7/8	80	616	
14	10	81	568	706	64	10	81	625	
15	10-1/2	85	630	775	65	10-1/2	85	693	
21 04 16	11-1/8	90	715	866	21 04 66	11-1/8	90	787	
17	11-3/4	95	790	965	67	11-3/4	95	869	
18	12	97	815	1,000	68	12	97	897	
19	12-3/8	100	880	1,059	69	12-3/8	100	968	

## 8-Strand Nylon Hawasers

Estachas de Nylon 8 Cordones

八つ打ちナイロンホーサー 八股线尼龙缆绳



Designed for sea berth mooring, towing, and other heavy-duty jobs. This rope will not kink and is highly durable.

When ordering, please indicate the number of eye splices and if a canvas or leather cover is required for the eyes. Also, please indicate if a certificate is required.

#### How to order: CODE

Hawser, nylon, 8-strand, DIAM x LENGTH

Mooring hawsers will be normally supplied with standard size of eye-splice at both ends.

Unit Per C/L

200 mtrs			220 mtrs						
CODE	Size		Breaking Strength kN	Size					
	Cir. inch	Diam. mm		Cir. inch	Diam. mm				
21 06 01	6	48	281	382	21 06 51	6	48	309	
02	6-1/4	50	304	422		52	6-1/4	50	334
03	6-1/2	52	330	451		53	6-1/2	52	363
04	6-7/8	55	368	500		54	6-7/8	55	405
05	7	56	382	508		55	7	56	420
21 06 06	7-1/2	60	438	588	21 06 56	7-1/2	60	482	
07	8	65	513	687		57	8	65	564
08	8-1/2	68	563	745		58	8-1/2	68	619
09	8-11/16	70	596	785		59	8-11/16	70	656
10	9	73	648	834		60	9	73	713
21 06 11	9-1/4	75	683	902	21 06 61	9-1/4	75	751	
12	9-1/2	77	721	951		62	9-1/2	77	793
13	9-7/8	80	777	1,030		63	9-7/8	80	855
14	10	81	796	1,049		64	10	81	876
15	10-1/2	85	874	1,147		65	10-1/2	85	961
21 06 16	11-1/8	90	980	1,275	21 06 66	11-1/8	90	1,078	
17	11-3/4	95	1,092	1,412		67	11-3/4	95	1,201
18	12	97	1,138	1,461		68	12	97	1,252
19	12-3/8	100	1,210	1,549		69	12-3/8	100	1,331
20	13	104	1,309	1,667		70	13	104	1,440
21 06 21	13-5/8	110	1,464	1,844	21 06 71	13-5/8	110	1,610	
22	14	113	1,545	1,942		72	14	113	1,700
23	14-7/8	120	1,742	2,167		73	14-7/8	120	1,916
24	15	121	1,771	2,206		74	15	121	1,948

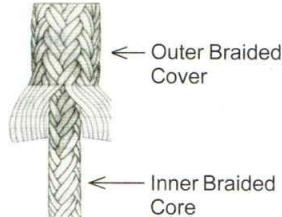
## Double Braided Hawsers

Estachas de Doble Trenzado

ダブルブレードホーサー

双股尼龙双层编织缆绳

Rope construction designed with a braided inner core which is covered with another braided outer sheath. Usually made of nylon, polypropylene multifilament, and polyester, or a combination of those materials.



The rope can be provided with either a nylon or polypropylene inner core and a polyester outer sheath. Standard length of the coil is 200 or 220 mtr. When ordering, please specify the coil length and the material brand required.

The Illustration of Double Braided Construction

#### Features of Double Braided Hawsers

- \* 30% higher breaking strength than the 3 or 8 strand rope.
- \* 30% less stretching/elongation than the 3 or 8 strand ropes.
- \* Superior abrasion resistance.
- \* High flexibility and easy handling.

Outer Braided Cover: Nylon  
Inner Braided Core : Nylon

#### How to order: CODE

Hawser, nylon, double braided, DIAM x LENGTH

200 mtrs						220 mtrs					
CODE	Size		Weight kg. coil	Breaking Strength kN	CODE	Size		Weight kg. coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 07 01	5	40	208	373	21 07 31	5	40	229			
02	5-1/4	42	227	405		32	5-1/4	42	250		
03	5-5/8	45	261	460		33	5-5/8	45	287		
04	6-1/4	50	320	559		34	6-1/4	50	352		
05	6-7/8	55	386	669		35	6-7/8	55	425		
21 07 06	7-1/2	60	459	787	21 07 36	7-1/2	60	505			
07	8	65	538	917		37	8	65	592		
08	8-11/16	70	624	1,049		38	8-11/16	70	686		
09	9-1/4	75	723	1,216		39	9-1/4	75	795		
10	9-7/8	80	824	1,373		40	9-7/8	80	906		
21 07 11	10-1/2	85	924	1,530	21 07 41	10-1/2	85	1,106			
12	11-1/8	90	1,037	1,716		42	11-1/8	90	1,141		
13	11-3/4	95	1,157	1,902		43	11-3/4	95	1,273		
14	12-3/8	100	1,279	2,108		44	12-3/8	100	1,407		

#### Outer Braided Cover: Polypropylene + Polyester

Inner Braided Core : Polypropylene

#### How to order: CODE

Hawser, polypropylene/Polyester mixed, double braided, DIAM x LENGTH

Unit Per C/L

200 mtrs						220 mtrs					
CODE	Size		Weight kg. coil	Breaking Strength kN	CODE	Size		Weight kg. coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 08 16	5	40	190	343	21 08 85	5	40	209			
17	5-1/4	42	210	376		86	5-1/4	42	231		
18	5-5/8	45	241	429		87	5-5/8	45	265		
19	6-1/4	50	309	518		88	6-1/4	50	340		
20	6-7/8	55	380	620		89	6-7/8	55	418		
21 08 21	7-1/2	60	450	730	21 08 90	7-1/2	60	495			
22	8	65	521	850		91	8	65	573		
23	8-11/16	70	605	964		92	8-11/16	70	666		
24	9-1/4	75	689	1,120		93	9-1/4	75	758		
25	9-7/8	80	786	1,270		94	9-7/8	80	865		
21 08 26	10-1/2	85	877	1,410	21 08 95	10-1/2	85	965			
27	11-1/8	90	995	1,580		96	11-1/8	90	1,095		
28	11-3/4	95	1,112	1,760		97	11-3/4	95	1,223		
29	12-3/8	100	1,243	1,940		98	12-3/8	100	1,367		

#### Outer Braided Cover: Polyester (Tetoron)

Inner Braided Core : Nylon

#### How to order: CODE

Hawser, polyester/nylon, double braided, DIAM x LENGTH

Unit Per C/L

200 mtrs						220 mtrs					
CODE	Size		Weight kg. coil	Breaking Strength kN	CODE	Size		Weight kg. coil			
	Cir. inch	Diam. mm				Cir. inch	Diam. mm				
21 09 01	5	40	243	385	21 09 31	5	40	267			
02	5-1/4	42	268	423		32	5-1/4	42	295		
03	5-5/8	45	308	482		33	5-5/8	45	339		
04	6-1/4	50	380	589		34	6-1/4	50	418		
05	6-7/8	55	460	706		35	6-7/8	55	506		
21 09 06	7-1/2	60	547	834	21 09 36	7-1/2	60	602			
07	8	65	642	970		37	8	65	706		
08	8-11/16	70	745	1,118		38	8-11/16	70	820		
09	9-1/4	75	855	1,275		39	9-1/4	75	941		
10	9-7/8	80	973	1,442		40	9-7/8	80	1,070		
21 09 11	10-1/2	85	1,098	1,618	21 09 41	10-1/2	85	1,208			
12	11-1/8	90	1,231	1,804		42	11-1/8	90	1,354		
13	11-3/4	95	1,372	2,000		43	11-3/4	95	1,509		
14	12-3/8	100	1,520	2,167		44	12-3/8	100	1,672		

## High Performance Mooring Ropes

### 8-Strand Dan Line Super

#### Polypropylene Ropes

Estachas Polipropileno "Dan Line Super" 8 Cordones

ダンラインスーパー ロープ 八股超强化纤维缆绳

The durability of this rope does not decrease as the strength of the load is increased. It is suitable to use for high tension work loads, for mooring, or as a towing line.



- \* 30 % higher breaking strength than polypropylene.
- \* Light weight: with a specific gravity of 0.91, it will float in water.
- \* Will become elongated when necessary to absorb shocks.
- \* Has superior abrasion resistance.

#### How to order: CODE

Hawser, polypropylene, Dan-Line Super, 8-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs			Breaking Strength kN	220 mtrs				
CODE	Size Cir. inch	Weight kg. coil		CODE	Size Cir. inch	Weight kg. coil		
21 10 01	5	40	152	229	21 10 26	5	40	167
02	5-1/4	42	167	253	27	5-1/4	42	184
03	5-5/8	45	191	288	28	5-5/8	45	210
04	6	48	218	326	29	6	48	240
05	6-1/4	50	236	352	30	6-1/4	50	260
21 10 06	6-1/2	52	256	379	21 10 31	6-1/2	52	282
07	6-7/8	55	286	422	32	6-7/8	55	315
08	7	56	296	436	33	7	56	326
09	7-1/2	60	340	497	34	7-1/2	60	374
10	8	65	399	579	35	8	65	439
21 10 11	8-1/2	68	437	631	21 10 36	8-1/2	68	481
12	8-11/16	70	463	667	37	8-11/16	70	509
13	9	73	504	721	38	9	73	554
14	9-1/4	75	531	760	39	9-1/4	75	584
15	9-7/8	80	605	859	40	9-7/8	80	666
21 10 16	10	81	620	880	21 10 41	10	81	682
17	10-1/2	85	683	964	42	10-1/2	85	751
18	11-1/8	90	765	1,069	43	11-1/8	90	842
19	11-3/4	95	853	1,187	44	11-3/4	95	938
20	12-3/8	100	945	1,314	45	12-3/8	100	1,040
21 10 21	13-5/8	110	1,140	1,579	21 10 46	13-5/8	110	1,254
22	14-7/8	120	1,360	1,853	47	14-7/8	120	1,496

\* 3-strand ropes available if required.

#### Tipto® Eight 8-Strand Mooring Ropes

Estachas "Tipto® Eight" 8 Cordones

ティプト・エイト・ロープ

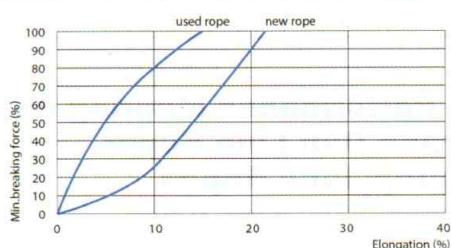
Tipto®Eight 八股缆绳

A high-performance mooring rope, TIPTO®EIGHT's strength, abrasion resistance and energy absorption ensure a long service life and low cost of ownership. The rope's small diameter and low weight make handling easier on board. As a floating rope, the risk of getting the rope caught in the ship and tug propeller is minimal, thus avoiding costly downtime.



#### Specifications

Specific Gravity	0.93 (floating)	Melting Point	Approx. 140°C
UV-resistance	Very Good	Construction	8-strand plaited
Abrasion Resistance	Very Good	Colour	Yellow
Chemical Resistance	Good	Marker Yarn	Orange
Elongation	See graph	Water Absorption	0%



#### How to order: CODE

Mooring rope, Tipto®Eight, 8-strand, DIAM x LENGTH

Unit Per Mtr.

CODE	Circ. Inch	Diam. mm	M.B.F. (kN)		Weight 100 mtr kg
			ISO2307	Spliced	
21 10 54	5	40	269	242	75.6
55	5-1/2	44	321	289	92.4
56	6	48	378	340	109
57	6-1/2	52	441	397	128
58	7	56	508	457	149
21 10 59	7-1/2	60	578	520	171
60	8	64	651	586	194
61	8-1/2	68	731	658	220
62	9	72	814	733	246
63	10	80	992	893	305
21 10 64	11	88	1,180	1,062	369
65	12	96	1,400	1,260	438

Name of Mfr.: Lankhorst Ropes

#### Karat® Maxi Plus Mooring Ropes 8-strand

Estachas "Karat® Maxi Plus" 8 Cordones

カラットマキシ プラスロープ カラ特八股缆绳



Karat® Maxi Plus has very high strength/weight ratio which allows substantial size reductions and ease in handling. It has the following performance features, \*Highest strength of the conventional permanently floating mooring ropes, \*High abrasion resistance, \*No loss of strength when wet, \*High energy absorption, \*Very low snap-back effect, \*Manufactured acc. to ISO and OCIMF MEG4 Guideline, \*Estalon™ is a polyester/polypropylene melt mixture, \*Eurolefin™ in the outer yarn. Ropes are tested and certified by Lloyd's Register type approval.

When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

#### Specifications

Melting Point	185°C	Spec. Gravity	0.99
Water Absorption	0%	Reduction of MBL when wet	0%
Bending Ratio, Dynamic	ISO 3730		9:1
Elongation, new rope			18.50%
Elongation, broken-in ropes (15-20 operations)			14.39%
On request: Larger diameter, different colour, 12-strand			

#### How to order: CODE

Mooring rope, Karat® maxi plus, 8-strand, DIAM x LENGTH

Unit Per Mtr.

CODE	Circ. Inch	Diam. mm	LDBF kN	Weight/ 100 mtr kg
			1	2
21 10 71	5	40	344	80
72	5-1/2	44	411	97
73	6	48	483	115
74	6-1/2	52	560	136
75	7	56	644	157
21 10 76	7-1/2	60	731	181
77	8	64	827	206
78	8-1/2	68	927	232
79	9	72	1,033	260
80	10	80	1,243	321
21 10 81	11	88	1,384	389
82	12	96	1,637	463
83	13	104	1,833	544
84	14	112	2,111	630

Name of Mfr.: Europe Marine A/S

## Atlas Mooring Ropes 6-Strand Cross-laid

Estachas Cruzado "Atlas" 6 Cordones

六つ打ちアトラスロープ

六股交织 Atlas 缆绳

Atlas rope is a synthetic fiber rope formed from 100 % nylon monofilament and continuous filament yarns. It has a greater tendency to elongate than steel ropes and therefore is less susceptible to breakage from shock tension strain. Also, compared to steel ropes, it requires much less maintenance and is considerably lighter and easier to handle, facilitating rapid mooring.



Atlas rope is generally easy to handle and can be spliced easily allowing for any type adjustment or moderation to be done on board. This rope has excellent resistance to abrasion and will become more flexible and easier to handle with extensive use. Standard length is 220 mtr. When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced. Relative density: 1.14.

### How to order: CODE

Mooring rope, Atlas, 6-strand cross-laid, DIAM x LENGTH

220 mtr/120 fms			Unit Per C/L	
CODE	Size		Weight kg/mtr	Breaking Strength kN
	Cir Ich	Diam. mm		
21 11 01	5	40	1.00	304.1
02	5-1/2	44	1.25	412.0
03	6	48	1.48	490.5
04	6-1/2	52	1.61	529.7
05	7	56	2.00	652.4
21 11 06	7-3/4	62	2.35	775.0
07	8	64	2.45	794.6
08	8-1/2	68	2.80	922.1
09	8-3/4	70	3.10	1,010.4
				103.0

## Karat® Winchline™ 6-Strand Mooring Ropes

Estachas "Karat Winchline" 6 Cordones

六つ打ちカラット・ウインチラインロープ

卡拉特六股缆绳



Combined the unique characteristics of the high strength Karat® fibres with a 6-strand "wire rope" lay. The outer layer of each strand comprises a special combination of Nylon monofilaments and Nylon multifilaments. This rope is specially designed to be used on self-tensioning winches and is DNV Type Approval. Special characteristics are high resistance to deformation, no crushing or jamming on winch, high abrasion resistance, excellent fatigue properties giving longer lifetime, and maintenance free. When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

### Specifications

Melting Point	250°C	Spec. Gravity	1.1
Water Absorption	2%	Reduction of MBL when wet	1%
Bending Ratio, Dynamic ISO 3730			12:1
Elongation, new rope			23%
Elongation, broken-in ropes (15-20 operations)			15%

### How to order: CODE

Mooring rope, Karat® winchline™, 6-strand, DIAM x LENGTH

CODE	Size		Breaking Strength kN	Weight/100 mtr kg
	Circ. Inch	Diam. mm		
21 11 85	5	40	308	99
86	5-1/2	44	391	115
87	6	48	466	137
88	6-1/2	52	503	161
89	7	56	625	187
21 11 90	7-1/2	60	671	214
91	8	64	764	244
92	8-1/2	68	876	276
93	9	72	1,007	309
94	10	80	1,174	381

Name of Mfr.: Europe Marine A/S

21

Rope & Hawsers

## Buoyant Winchline™ 6-Strand Mooring Ropes

Estachas "Buoyant Winchline" 6 cordones

六つ打ちブイアントウインチライン



A unique fibre rope with a 6-strand "wire rope lay". The outer layer of each strand comprises a special combination of Nylon monofilaments and PP multifilaments. Buoyant Winchline™ is designed to be permanently floating and to be used on self tensioning winches. Special characteristics are light weight (floats), high resistance to deformation, no crushing or jamming on winch, high abrasion resistance, excellent fatigue properties giving longer lifetime, high strength which gives better safety, and maintenance free.

When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

### Specifications

Melting Point	250/165°C	Spec. Gravity	0.99
Water Absorption	2%	Reduction of MBL when wet	1%
Bending Ratio, Dynamic ISO 3730			12:1
Elongation, new rope			23%
Elongation, broken-in ropes (15-20 operations)			15%

### How to order: CODE

Mooring rope, Buoyant winchline™, 6-strand, DIAM x LENGTH

CODE	Size		Breaking Strength kN	Weight/100 mtr kg
	Circ. Inch	Diam. mm		
21 11 85	5	40	308	99
86	5-1/2	44	391	115
87	6	48	466	137
88	6-1/2	52	503	161
89	7	56	625	187
21 11 90	7-1/2	60	671	214
91	8	64	764	244
92	8-1/2	68	876	276
93	9	72	1,007	309
94	10	80	1,174	381

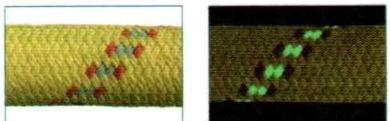
Name of Mfr.: Europe Marine A/S

## Tipto® Winchline 7-strand Fibre Mooring Ropes

Cable de Amarre de Fibra "Tipto-Winchline", 7 Trenzas

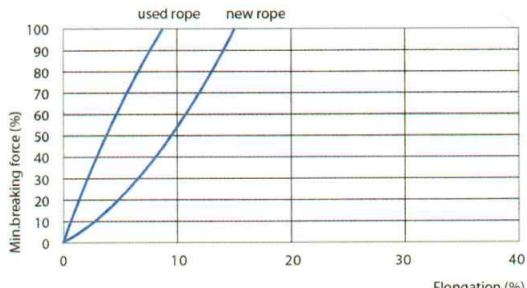
七つ打ちティプトウインチライン・ロープ Tipto 绞车缆绳

A dedicated floating winch line for self-tensioning winches. This load-bearing 7 strand core combines high strength and relatively low elongation. The non-loadbearing braided jacket includes phosphorescent tracer yarn allowing the rope to glow during the hours of darkness, increasing dockside visibility and creating a pleasing visual effect of the moored vessel for your passengers. The jacket also provides protection of the core for longer service life. The mooring efficiency of the vessel is enhanced by the ease of handling of the rope due to its low weight and ability to float. Tipto® Winchline does not lose its strength when wet.



### Specifications

Specific Gravity	0.93 (Floating)	Construction	7-strand +jacket
UV-resistance	Very Good	TCLL Value	72.7%
Abrasion Resistance	Very Good	Colour	Yellow
Chemical Resistance	Good	Marker Yarn	Orange
Elongation	See graph	Water-absorption	0%
Melting Point	Approx. 140°C	On Request	Larger Diameter



### How to order: CODE

Mooring rope, Tipto® Winchline, 7-strand, DIAM x LENGTH,  
LENGTH OF SPLICE if necessary

CODE	Diam. mm	M.B.F. (kN)		Weight 100 mtr/kg	Unit Per Mtr.
		ISO2307	Spliced		
21 17 73	36	248	223	74	
74	42	340	306	98	
75	46	425	383	115	
90	48	472	425	125	
76	50	512	461	133	
21 17 77	54	598	538	150	
91	56	640	576	160	
78	58	682	614	167	
92	60	730	657	184	
93	62	780	702	190	
21 17 79	64	850	765	203	
80	68	934	841	221	
94	70	990	891	240	
81	74	1,100	990	256	
82	80	1,270	1,143	355	
21 17 83	82	1,350	1,215	380	
95	84	1,420	1,278	395	

Name of Mfr.: Lankhorst Ropes

## CE Compound Mooring Ropes

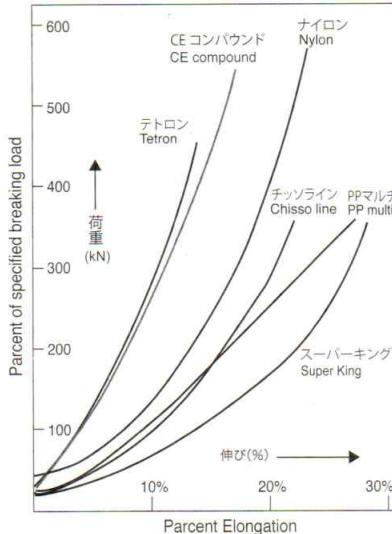
Estachas Compuesto "CE"

CE コンパウンドムアリングロープ CE 合成缆绳

Newly developed mooring rope, made from complex material, which offers excellent abrasion resistance and fatigue resistance. Due to the lighter specific gravity than water, will float and is easier to handle.

N.K. (Nippon Kaiji Kyokai) certificate will be attached.

### Load Elongation Curve



CODE	Size		Weight kg/200 mtr	Medium Strength kN
	Circ. Inch	Diam mm		
21 15 01	3-3/4	30	104	140
	4	32	119	158
	4-3/8	35	141	185
	5	40	185	246
	5-5/8	45	234	306
21 15 06	6	48	266	352
	6-1/4	50	288	375
	7	55	349	458
	7-1/2	60	415	522
	8	65	487	607
21 15 11	8-11/16	70	566	706
	9-1/4	75	649	818
	10	80	739	917
	10-1/2	85	834	1,044
	11-1/18	90	935	1,148
21 15 16	11-3/4	95	1,042	1,272
	12-3/8	100	1,155	1,410
	13-3/4	110	1,398	1,666
	15	120	1,664	1,991

Name of Mfr.: Obama Rope Mfg.

## Marine Power 12-Strand Mooring Ropes

Cable de Amarre con 12 Trenzas

マリンパワーロープ 船用 12 股缆绳

Made by combination of polyester multi-filament and special polypropylene mono-filament which braided with 6 pairs of two strands together. The braided surface is smoother than



conventional 8-strand rope makes more better durability in abrasion.

The 12 strands rope produced 20% higher tensile strength than conventional 8-strand of rope and longer pitch about 1.5 times than strander diameter makes excellent characteristics in handling.

Ordering can be made by indicate clearly the following items ; Size (Diameter), length (Standard length 200 mtr – the length of rope will be requested by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

#### How to order: CODE

Mooring rope, Marine Power, 12-strand, DIAM x LENGTH

CODE	Circ. Inch	Diam mm	Breaking Strength kN	Weight / 200 mtr kg	Unit Per Mtr.
21 15 31	3-3/4	30	175	102	
32	4	32	198	116	
33	4-1/4	34	222	131	
34	4-1/2	36	247	146	
35	4-3/4	38	274	163	
21 15 36	5	40	302	181	
37	5-1/4	42	331	199	
38	5-5/8	45	378	229	
39	6-1/4	50	462	283	
40	6-7/8	55	553	342	
21 15 41	7-1/2	60	653	407	
42	8	65	760	477	
43	8-11/16	70	875	554	
44	9-1/4	75	997	636	
45	9-7/8	80	1,130	723	
21 15 46	10-1/2	85	1,260	816	
47	11-1/8	90	1,410	915	
48	11-3/4	95	1,560	1,020	
49	12-3/8	100	1,720	1,130	

Name of Mfr.: Tesac

CODE	Size		Minimum Breaking Strength kN	Weight / 200 mtr kg	Unit Per Mtr.
	Circ. Inch	Diam mm			
21 15 51	5	40	246	181	
52	5-5/8	45	308	229	
53	6-1/4	50	376	283	
54	6-7/8	55	451	342	
55	7-1/2	60	532	407	
21 15 56	8	65	619	477	
57	8-11/16	70	713	554	
58	9-1/4	75	813	636	
59	9-7/8	80	919	723	
60	10-1/2	85	1,030	816	
21 15 61	11-1/8	90	1,150	915	
62	11-3/4	95	1,270	1,020	
63	12-3/8	100	1,400	1,130	
64	13-5/8	110	1,680	1,370	
65	14-7/8	120	1,990	1,630	

Name of Mfr.: Tesac

## Mooring Ropes

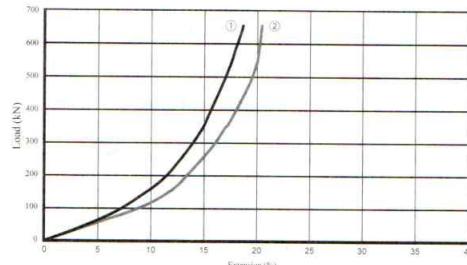
Polypropylene/Polyester Composite Rope  
"Bell Mix Rope"

Cable de Amarre/Cable compuesto de Polipropileno y Poliéster  
混紡ロープ "ベルミックスロープ" 繩船索 聚丙烯 / 聚酯纖維混合繩

A composite rope with Polypropylene and Polyester with the following remarkable characteristics ; Low elastic elongation, stronger resistance to cut and abrasion, easy to handle and process of eye-splice, etc. The rope keeps same strength whichever in air or in sea, and it floats. There are three types of braided construction as illustrated below. Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

	12-strand (2x6) Southern Cross
	12-strand (1x12) Southern Braid

#### Load Elongation Curve



① Bell Mix Southern Braid (1x12)  
Rope diam. 60 mm, B/S 660 kN

② Bell Mix Southern Cross (2x6)  
Rope diam. 60 mm, B/S 653 kN

Properties: Melting Point

Polypropylene 163°C , Polyester 240°C

#### 12-strand (2x6) Southern Cross

#### How to order: CODE

Mooring rope, Polypropylene / Polyester composite, Bell Mix, 12-strand Southern Cross, DIAM X LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

## Mooring Ropes 8-Strand "Marine-Combi-Rope"

Cable de Amarre con 8 Trenzas "Marine Combi Rope"

マリンコンビロープ 8股线系船缆 海上混合钢索

Made by mixing of polyester multi-filament (White colour) and special polypropylene mono-filament (Orange color) which braided with 8 pairs of strands together. By the mixing of these two elements makes well balanced in floating, abrasion and cost saving.



The color of white polyester and orange of polypropylene mono-filament can be seen clearly in the water. One of the strongest ropes among water-floating product in 8-strand rope category.

Ordering can be made by indicate clearly the following items; Size (Diameter), length (Standard length 200 mtr - the length of rope will be requested by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

#### How to order: CODE

Mooring rope, Marine-Combi Rope, 8-strand, DIAM x LENGTH

CODE	Size		B/S kN	Weight kg/200 mtr
	Circ. Inch	Diam mm		
21 15 81	5	40	305	183
82	5-5/8	45	382	232
83	6-1/4	50	467	286
84	6-7/8	55	559	346
85	7-1/2	60	660	412
21 15 86	8	65	763	483
87	8-11/16	70	884	560
88	9-1/4	75	1,010	643
89	9-7/8	80	1,140	731

Name of Mfr.: NAROC ROPE TECH.

## 12-strand (1 × 12) Southern Braid

### How to order: CODE

Mooring rope, Polypropylene / Polyester composite, Bell Mix, 12-strand Southern Braid, DIAM X LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size		B/S kN	Weight kg/200 mtr
	Circ. Inch	Diam mm		
21 15 91	5	40	305	183
92	5-5/8	45	382	232
93	6-1/4	50	467	286
94	6-7/8	55	559	346
95	7-1/2	60	660	412
21 15 96	8	65	763	483
97	8-11/16	70	884	560
98	9-1/4	75	1,010	643
99	9-7/8	80	1,140	731

Name of Mfr.: NAROC ROPE TECH.

## Mooring Rope Size Guide to Ship's Weight for Bell Mix (Polypropylene / Polyester Composite Rope)

Ship's Type and Weight	Kind of Rope and Size
Chemical Tanker (12,000 t - 33,000 t)	Southern cross (2×6) 55 mm - 65 mm dia
Products Carrier (45,000 t - 47,000 t)	Southern braid (1×12) 60 mm - 65 mm dia.
Cape Size Bulk Carrier (180,000 t - 207,000 t)	Southern cross (2×6) 70 mm - 75 mm dia Southern braid (1×12) 70 mm - 75 mm dia.
Panamax Size Bulk Carrier (76,000 t - 82,000 t)	Southern cross (2×6) 70 mm dia Southern braid (1×12) 70 mm dia
Pure Car Carrier (6,400 UNITS)	Southern cross (2×6) 75 mm dia. Southern braid (1×12) 75 mm dia.

### Remark:

This information is suggested by NAROC ROPE TECH., and please acknowledge that the actual applications in your ships case will be different depending on the ship structure, ship designing department, and the condition of the port of call.

## Mooring Ropes

### High Strength Nylon "Unilon"

Cable de Nilón Altamente Reforzado "Union"

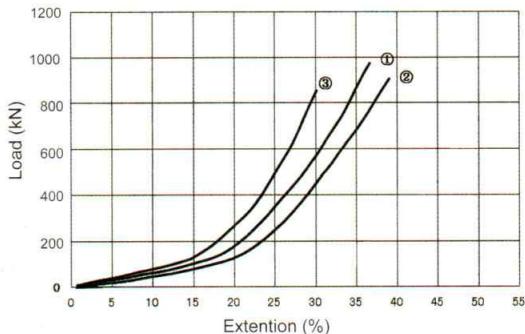
ユニロンロープ 高耐受力尼龍繫船索 "Unilon"

Compared to former nylon ropes, Unilon rope produces 30% higher strength, providing substantially better service life. It keeps softness even after long period of operation, and keeps endurance to direct ray, inclement climate, and cold climate.

Available three types of construction as illustrated below. Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

	12-strand (2 × 6) Southern Cross
	Double Braided

## Load Elongation Curve



①Unilon Double Braid

Rope diam. 60 mm. B/S 958 kN

②Unilon Southern Cross (2×6)

Rope diam. 60 mm. B/S 890 kN

③UnimixG Double Braided

Rope diam. 60 mm, B/S 835 kN

Properties: Union (UnimixG), Gravity 1.14 (1.21), Melting point 180°C

## 12-strand (2 × 6) Southern Cross

### How to order: CODE

Mooring rope, high strength Nylon, Unilon, 12-strand southern cross, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size		B/S	Weight
	Circ. Inch	Diam mm		
21 19 11	5	40	417	200
12	5-5/8	45	519	253
13	6-1/4	50	635	313
14	6-7/8	55	763	378
15	7-1/2	60	890	450
21 19 16	8	65	1,040	528
17	8-11/16	70	1,200	613
18	9-1/4	75	1,370	703
19	9-7/8	80	1,540	800

Name of Mfr.: NAROC ROPE TECH.

## Double Braided Rope Unilon

### How to order: CODE

Mooring rope, high strength Nylon, Unilon, double braided, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size		B/S	Weight	Unit Per Mtr.
	Circ. Inch	Diam mm	kN	kg/200 mtr	
21 19 21	5	40	449	206	
22	5-5/8	45	557	261	
23	6-1/4	50	679	322	
24	6-7/8	55	814	389	
25	7-1/2	60	958	463	
21 19 26	8	65	1,120	543	
27	8-11/16	70	1,290	630	
28	9-1/4	75	1,490	723	
29	9-7/8	80	1,660	823	

Name of Mfr.: NAROC ROPE TECH.

### Double Braided Rope UnimixG

#### How to order: CODE

Mooring rope, low extension Nylon Unilon G and Polyester, double braided, DIAM X LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size		B/S	Weight	Unit Per Mtr.
	Circ. Inch	Diam mm	kN	kg/200 mtr	
21 19 31	5	40	449	206	
32	5-5/8	45	557	261	
33	6-1/4	50	679	322	
34	6-7/8	55	814	389	
35	7-1/2	60	958	463	
21 19 36	8	65	1,120	543	
37	8-11/16	70	1,290	630	
38	9-1/4	75	1,490	723	
39	9-7/8	80	1,660	823	

Name of Mfr.: NAROC ROPE TECH.

### Mooring Rope Size Guide to Ship's Weight for Unilon (High Strength Nylon Rope)

Ship's Type and Weight	Kind of Rope and Size
Cape Size bulk Carrier (180,000 t - 207,000 t)	Double braided 65mm - 70 mm dia Cross (2 x 4) 70 mm - 75 mm dia
Panamax Size Bulk Carrier (76,000 t - 82,000 t)	Southern Cross (2 x 6) 65 mm- 70 mm dia
Pure Car Carrier (7,500 UNITS)	Double braided 75 mm dia Southern Cross (2 x 6) 75 mm dia
Container Ship (20,000 TEU)	Souther cross (2 x 6) 80 mm dia Double braided 80 mm dia
Container Ship (5,980 TEU)	Southern cross (2 x 6) 75 mm dia Double braided 70 mm dia - 75 mm dia
Container Ship (1,800 - 2,400 TEU)	Double braided 60 mm - 65 mm dia

#### Remark:

This information is suggested by NAROC ROPE TECH., and please acknowledge that the actual applications in your ships case will be different depending on the ship structure, ship designing department, and the condition of the port of call.

### Mooring Lines 8-strand Eurofloat® Premium

Cuerda de Amarre a 8 Trenzas Eurofloat

ユーロフロートプレミアムロープ

八股繫泊索

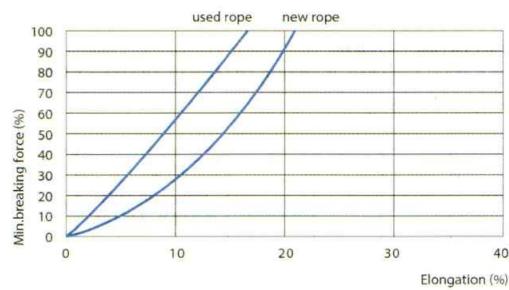


A floating high performance rope constructed from high strength polyolefin and polyester yarns. It is manufactured to the latest EN and ISO standards, and complies with OCIMF recommendations. The floating characteristic makes it a safe rope to work with, while its high TCLL value ensures excellent fatigue resistance.

Tested in compliance with OCIMF MEG4: 32 – 88 mm  
DNV type approved product: 32 – 112 mm

#### Specifications

Specific Gravity	0.98 (Floating)	Construction	8-strand plaited
UV-resistance	Good	Elongation	See graph
Abrasion Resistance	Very Good	T.C.L.L Value	74.18%
Chemical Resistance	Good	Colour	White
Melting Point	Approx. 165°C/ 260°C	Marker Yarn	Two green markers
		Water-absorption	0.1%



CODE	Circ. Inches	Diam. mm	M.B.F.(kN)		Weight kg/100 mtr
			ISO2307	Spliced/LDBF	
21 16 85	4	32	207	186	53
86	4-1/2	36	259	233	67
87	5	40	324	292	85
88	5-1/2	44	377	339	99
89	6	48	456	410	120
21 16 90	6-1/2	52	534	481	141
91	7	56	613	552	162
92	7-1/2	60	701	631	188
93	8	64	799	719	216
94	8-1/2	68	900	810	245
21 16 95	9	72	1,000	900	275
96	9-1/2	76	1,098	988	305
97	10	80	1,205	1,085	339
98	11	88	1,470	1,323	411
99	12	96	1,735	1,562	490

Name of Mfr.: Lankhorst Ropes

### Euroflex® 8-strand Plaited Fibre Mooring Ropes

Cable de Amarre de Fibra Chapada, 8 trenzas, "Euroflex"

ユーロフレックスロープ

Euroflex 八股纤维缆绳

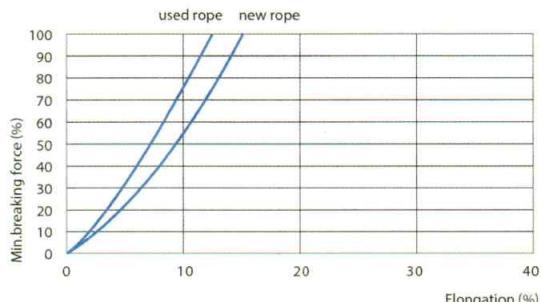
An excellent handling properties, softness and flexibility, combined with high energy absorption capability and abrasion resistance, one of the best option available today for mooring and towing for both shipping and offshore operations.



Tested in compliance with OCIMF MEG4: 40 – 88 mm  
DNV type approved product: 24 – 144 mm

**Specifications**

Specific Gravity	1.14	Melting Point	Approx. 165°C/ 265°C
UV-resistance	Good	Construction	8-strand plaited
Abrasion Resistance	Very Good	Colour	White
Chemical Resistance	Good	Marker Yarn	Yellow
Elongation	See graph	Waterabsorp	<0.5%

**How to order: CODE**

Mooring rope, Euroflex, 8-strand, DIAM x LENGTH, LENGTH OF SPLICE, if necessary

Unit Per Mtr.

CODE	Circ. Inches	Diam. mm	M.B.F.(kN)		Weight kg/100 mtr
			ISO2307	Spliced/LDBF (OCIMF MEG4)	
21 17 51	5	40	432	389	102
52	5-1/2	44	518	466	124
53	6	48	612	551	148
54	6-1/2	52	714	643	173
55	7	56	823	741	201
21 17 56	7-1/2	60	941	847	231
57	8	64	1,061	955	263
58	8-1/2	68	1,197	1,077	296
59	9	72	1,334	1,201	332
60	9-1/2	76	1,481	1,333	370
21 17 61	10	80	1,628	1,465	411
70	10-1/2	84	1,785	1,607	452
62	11	88	1,964	1,768	497
63	12	96	2,321	2,089	590
64	13	104	2,699	2,429	689
21 17 65	14	112	3,119	2,807	803
66	15	120	3,549	3,194	923
67	16	128	4,022	3,620	1,050
68	17	136	4,515	4,064	1,187
69	18	144	5,040	4,536	1,334

Name of Mfr.: Lankhorst Ropes

**Nika-Cord® 8 Strand Ropes**

Cuerda de 8 hilos ニカコードロープ 8股绳 Nika-Cord®

Constructed using double twisted yarns of NIKA-steel® fibers, a special melt mixture of high quality European raw materials (Polypropylene, High Density Polyethylene, UV stabilizer and other improving elements).



They exhibit much higher tenacity and abrasion resistance than most conventional monofilament and flat Polypropylene and Polyolefin fibers.

The double twisting process offers improved performance in dynamic and shock loading conditions while maximizing the resistance against internal and external abrasion.

Constructed according to ISO 10572 and they comply with

the latest regulations and recommendations of OCIMF for the safe mooring of tankers.

Applications: Mooring, Anchoring, Messenger Lines, Tow Lines, Tails

- \* Specific gravity : 0.92 (Floating)
- \* Melting point : 165 °C
- \* Elongation at breaking : 18%
- \* Chemical resistance to alkali : Good
- \* Chemical resistance to organic solvent : Excellent
- \* Chemical resistance to acid : Excellent
- \* Strength loss in NaOH and H<sub>2</sub>SO<sub>4</sub> in high concentration and temperature

**8-strands (4X2)**

CODE	Diam. mm	Breaking Load Tons	Unit Per C/L Weight kg (220 m)
21 17 13	28	14.5	78
14	32	18.5	101
27	36	23.0	128
01	40	27.9	158
02	44	33.3	194
21 17 03	48	39.2	229
04	52	45.7	268
05	56	52.4	312
06	60	59.4	359
07	64	67.0	407
21 17 28	68	75.3	462
08	72	83.6	515
29	76	92.5	576
09	80	101.5	638
30	84	111.4	704
21 17 10	88	121.3	772
11	96	142.7	915
12	104	165.2	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

**Nikaforce® Polypropylene Mooring Ropes**

Cable de Amarre de Polipropileno, "Nikaforce"

ニカフォース・ポリプロピレン・ロープ Nikforce 丙纶大缆绳

NIKAFORCE® ropes exhibit:

- Exceptional strength to weight ratio
- High breaking load exceeding Cordage Institute specification CI 1901 and EN ISO 10572<sup>1</sup> specs.
- High abrasion resistance
- U.V. stabilization to 160 KLY (Suitable for Florida, U.S.A. & Dubai, UAE sunshine).
- High shock & dynamic load absorption, with filaments of equal thickness and tensile strength.
- Electronically controlled even load distribution.
- Ease of handling.

<sup>1</sup>EN ISO 10572 has replaced EN 14687 standard

Only virgin bright white European raw materials used. Filament tensile strength exceeds EN and ISO specifications. Recommended working load limit: 20% of the minimum breaking load. Approved by ABS, B.V., L.R.S., G.L. Ropes are also according to the latest regulations and recommendations of OCIMF for the safe mooring of tankers. Ordering can be made by indicating clearly the following items; Preferable number of strands (8-strands, 12 strands or 24 strands), Size (Diameter), Length (Standard length 220 mtr – the length of rope will be specified by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

Applications : Mooring, Anchoring, Towing, Tails.  
 Melting Point : 165°C  
 Elongation at Breaking : 15%  
 Specific Gravity : 0.92 (Floating)

### 12-strands (12X1)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kg (220 m)
21 17 15	40	31	158
16	44	38	194
17	48	44	229
18	52	50	268
19	56	57	312
21 17 20	60	64	359
21	64	73	407
22	72	92	515
23	80	111	638
24	88	130	772
21 17 25	96	153	915
26	104	174	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

### 24-strands (12X2)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kg (220 m)
21 17 31	40	31	158
32	44	38	194
33	48	44	229
34	52	50	268
35	56	57	312
21 17 36	60	64	359
37	64	73	407
38	72	92	515
39	80	111	638
40	88	130	772
21 17 41	96	153	915
42	104	174	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

## Improved Mixed “NIKASTEEL®” 12/24 Strand Ropes, Polyester/ NIKA STEEL Combination

Cable de amarre mejorado ニカスティール・ムアーリングローブ  
系泊缆

Constructed using specially twisted yarns of NIKA-Steel® fibers with High Tenacity Polyester fibers (in a 60% - 40% w/w combination respectively) in the outer layers of the strand. Each strand is composed of mixed NIKA-Steel®/ HT Polyester yarns in the outer layers and NIKA-Steel® yarns in the core layer.



Their mechanically balanced structure, accordant to EN ISO 10556, protects the strands' outer layers against abrasion while achieving high breaking strengths.

Produced according to international standards such as EN ISO 10556.

Comply with the latest regulations and recommendations of OCIMF for the safe mooring of tankers.

APPLICATIONS: MOORING – ANCHORING – TAILS

Specific gravity: 0.99 (Floating)

Average Polyester w/w percentage: 25%

Melting point: 165°C (NIKA-STEEL®) / 265°C (PES)

Elongation at breaking: 15%-18%

Chemical resistance to ALKALI: VERY GOOD

Chemical resistance to ORGANIC SOLVENT: VERY GOOD

Chemical resistance to ACID: EXCELLENT.

Strength loss in NaOH and H<sub>2</sub>SO<sub>4</sub> in high concentration and temperature

### 12-strands (12X1)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kg (220 m)
21 19 58	28	17.5	90
59	32	23	130
60	36	28	146
61	40	34	174
62	44	40	211
21 19 63	48	47	253
64	52	53	299
65	56	62	342
66	60	69	396
67	64	79	458
21 19 89	68	88	515
68	72	98	572
90	76	110	638
69	80	121	706
91	84	132	774
21 19 70	88	144	842
71	96	169	1,020
72	104	196	1,177

Name of Mfr.: Katradis Marine Ropes Industry SA

### 24-strands (12X2)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kg (220 m)
21 19 74	28	17.5	90
75	32	23	130
76	36	28	146
77	40	34	174
78	44	40	211
21 19 79	48	47	253
80	52	53	299
81	56	62	342
82	60	69	396
83	64	79	458
21 19 92	68	88	515
84	72	98	572
93	76	110	638
85	80	121	706
94	84	132	774
21 19 86	88	144	842
87	96	169	1,020
88	104	196	1,177

Name of Mfr.: Katradis Marine Ropes Industry SA

## Mooring Ropes “Timm Master 12 SBA”

Cuerda de amarre "TIMM Master 12 SBA".

ムアーリングローブ "TIMM マスター 12 SBA"

系泊绳索 "TIMM Master 12 SBA"

The safest conventional mooring rope, which reduces dangerous snap backs by utilizing the innovative solution of Timm Snap Back Arrestor (SBA™) technology. If the load bearing construction breaks, the SBA™



will absorb the snap back forces, resulting in a reduction of snap back. As a result of the construction and the rope having high tenacity polyester in the outer layer of the strands, Timm™ Master 12 SBA™ has excellent abrasion resistance. The color scheme is designed to give a visual anti-twist indicator to easily spot undesirable twists in the rope. Timm Master 12 SBA™ being floating and resistant to UV, with one of the best strength-to-weight ratios on the market, it serves as a lightweight and reliable solution, suitable for all vessel types.

The SBA technology is currently being certified by DNV. All Timm Master 12 SBA™ ropes are compliant with OCIMF MEG 4, SIRE 2.0, RightShip RISQ2.0, SOLAS, Intertanko.

Material	75% Polyolefin / 25% HT Polyester
Eyes	1.8m mesh braid protected eyes
Colour	Blue and white anti-twist colour indicators
Melting Point	165°C
Density [kg/m³]	0.99 (floating)
Line Construction	12-strand braided
Elongation	18% at break

Unit Per Mtr.

CODE	Diameter [mm]	LDBF from: [kN]	LDBF up to: [kN]	LDBF from: [metric ton]	LDBF up to: [metric ton]
21 13 71	36	203	255	20.7	26
21 13 72	40	256	315	26.1	32.1
21 13 73	45	316	397	32.2	40.5
21 13 76	51	398	508	40.6	51.8
21 13 78	55	509	590	51.9	60.2
21 13 79	57	591	632	60.3	64.4
21 13 81	62	633	746	64.5	76.1
21 13 82	67	747	869	76.2	88.6
21 13 83	73	870	1,028	88.7	104.8
21 13 84	77	1,029	1,142	104.9	116.5
21 13 86	81	1,143	1,261	116.6	128.6

Name of Mfr.: Wilhelmsen Ships Service

## Mooring Rope Arrangement for Tankers in accordance with OCIMF Mooring Equipment Guidelines (MEG4)

Disposición de la cuerda de amarre para petroleros de acuerdo con las directrices del OCIMF sobre equipos de amarre (MEG4)

OCIMF ガイドライン (MEG4) に準拠したタンカー向け係船索について  
根据 OCIMF 系泊设备准则 (MEG4) 进行的油轮系泊绳索布置

**Ship design Minimum Breaking Load (ship design MBL)**  
The MBL of new dry mooring lines for a ship's mooring system meets environmental criteria restraint requirements. Ship design MBL is the core parameter for sizing and designing all other components of the mooring system within defined tolerances.

### Line Design Break Force (LDBF)

New & dry mooring lines have a declared breaking force specified by the manufacturer. LDBF of selected lines should be 100%-105% of ship design MBL. Nylon lines are tested wet and spliced.

Wet testing should be specified for the LDBF for nylon (polyamide) mooring lines.

### Working Load Limit (WLL)

WLL is the maximum load for mooring lines based on environmental criteria. It is expressed as a percentage of ship design MBL and used as a limit in design and operations.

Steel wire ropes have a WLL of 55%, while all other cordage (synthetic) has a WLL of 50% of the ship design MBL.

Ship design MBL simplifies analysis and comparison, despite manufacturer differences.

### Design Basis Load (DBL)

The design load on a fitting, calculated by multiplying the ship design MBL by the Factor (GF).

### Tail Design Break Force (TDBF)

TDBF (The Tail Design Break Force) for tails should be higher than LDBF due to increased wear. The TDBF of tails should be 125%-130% of ship design MBL, TDBF is tested and defined in the wet condition and accounts for any material strength loss when wet. Increasing TDBF beyond this may not enhance fatigue life and can compromise system integrity. Grommet configurations have rated break forces, but D/d ratios from common joining methods may not achieve them. Users should seek tail manufacturer guidance.

### Tail configurations

Prefer single leg tails, but grommets have advantages in certain operations. If smaller diameter needed, use double the stiffness of single leg.

### Tail Connections (Joining Shackles)

Tail connections: Through the use of mechanical connecting devices (i.e. joining shackles) or directly with the use of a cow hitch. Considerations for each method explained below.

#### Connection devices

Tail connections: Metal devices used for steel wire and HMSC lines. If alternative materials may be considered, follow the guidance. No standard safety factors between SWL and minimum yield strength or Ultimate Tensile Strength (UTS)/ failure values.

Most manufacturers will supply connection devices with a safety factor of three (breaking load three times the SWL). Joining shackles' SWL should be equal to or greater than the mooring lines' WLL.

SWL should not exceed working load range. WLL values for wires and synthetic lines differ (55% and 50% of ship design MBL respectively). Matching shackle SWL to WLL is not necessary. Minimum safety factor of three is recommended. Consider mooring system design to minimize connecting device failure risk.

All values are percentage values of the ship design MBL.

Lines						
Mooring Line Type/Component	Wire	Synthetic	HMSC	Polyamide (Nylon)	Synthetic Tail	Joining Shackle
Shackle SWL (Synthetic)						50
Shackle SWL (Wire)						55
Working Load Limit (WLL)	55	50	50	50		
Ship design MBL	100	100	100	100	100	100
Replace	75	75	75	75	75	
Line Design Break Force (LDBF)	100	100	100	100	125	
LDBF (Max)	105	105	105	105	130	

## Ultra High Molecular Weight Polyethylene (UHMWPE) Fiber Mooring Ropes 12-Strand "AmSteel®-Blue", Dyneema SK78

Cable de Amarre con 12 Trenzas de Fibras de Polietileno de Ultra Macro Peso Molecular (UHMWPE) "AmSteel-Blue"

超高密度分子重量ポリエチレン繊維ロープ アムスチル・ブルー  
12股迪尼玛超强拉力大缆绳



AmSteel®-Blue is a proven cost-saving replacement for wire rope in key applications where strength, weight and safety are important.



Recognized worldwide as the standard for single braid HMPE ropes, AmSteel®-Blue is easily spliced and inspected. These features, with the superior wear and tension fatigue of Dyneema® SK-78 fiber and Samthane coating, are combined in a torque-free 12-strand single braid design. The result is an industry-leading braided synthetic rope that outlasts wire rope and has proven operator cost saving benefits.

AmSteel®-Blue, at only 1/7th the weight of wire, requires less committed crew for most operations, significantly reduces mooring times and tug costs, and improves crew safety. The reduced weight, high strength and low stretch also make it ideal for tug assist/maneuvering lines, resulting in quick, efficient connections and controlled response. AmSteel®-Blue is proven to provide longer service life and reduced costs when compared to wire in a variety of applications.

Standardized working pendants are available for mooring and tug assist lines. It is recommended for split drum winch applications, not recommended for use on H-bitts, capstans or cleats if surging or rendering the rope is required.

Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

### Features:

- Uses Dyneema SK-78
- A Size for size strength replacement for wire rope at only 1/7th the weight
- Torque-free, very flexible, easy to handle
- Similar elastic elongation to wire rope
- Easily inspected or field spliced
- Floats

### Applications

- Primary vessel mooring lines
- Face and wing wires for push tugs
- Emergency and seismic tow lines

### Technical Specifications

Specific Gravity: 0.98 (Floats)

Elastic Elongation %: At-% of break strength  
10%.....0.46%, 20%.....0.70%, 30%.....0.96%

Splicing Procedures Required:

Eye splice - 12 strand/Class II rope

End for end splice - 12 strand/Class II rope

### How to order: CODE

Mooring rope, 12-strand, "AmSteel®-Blue", Dyneema SK-78, DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE

CODE	Size			Strength ISO/BS EN919	Unit Per Mtr. Weight kg per 100 mtr	
	Dia.		Circ. Inch			
	Inch	mm	MBS* Metric Tonnes			
21 16 01	1/4	6	3/4	3.9	2.4	
	5/16	8	1	6.2	4.0	
	3/8	9	1-1/8	8.9	5.1	
	7/16	11	1-1/4	10.8	6.7	
	1/2	12	1-1/2	15.4	8.8	
21 16 06	9/16	14	1-3/4	18.4	11.8	
	5/8	16	2	24.0	15.2	
	3/4	18	2-1/4	29.2	19.8	
	7/8	22	2-3/4	41.2	29.2	
	1	24	3	49.4	32.4	
21 16 12	1-1/16	26	3-1/4	60.8	40.9	
	1-1/8	28	3-1/2	67.1	47.5	
	1-1/4	30	3-3/4	74.8	53.9	
	1-5/16	32	4	84.0	62.2	
	1-3/8	34	4-1/8	93.0	67.0	
21 16 16	1-1/2	36	4-1/2	103.0	76.9	
	1-5/8	40	5	128.0	97.0	
	1-11/16	42	5-1/4	139.0	106.0	
	1-3/4	44	5-1/2	152.0	117.0	
	2	48	6	178.0	129.0	
21 16 20	2-1/8	52	6-1/2	207.0	162.0	
	2-1/4	56	7	244.0	173.0	
	2-1/2	60	7-1/2	267.0	220.0	
	2-5/8	64	8	300.0	248.0	
	2-3/4	68	8-1/2	333.0	278.0	
21 16 25	3	72	9	377.0	307.0	
	3-1/4	80	10	457.0	357.0	

Remark: \*MBS denotes Minimum Breaking Strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Tug and Mooring Lines, 8-strand Blend of Polyester & Dyneema SK-75, "Quantum-8™"

Cuerda de Tirar y Amarrear a 8 Trenzas

8本撓りムアリングライン 八股拖船及繩泊索



Quantum-8 was developed to meet customer requests for a light-weight, high-strength, torque-free rope that can float and grip a winch or capstan. Quantum-8 is a unique upgrade. This patented construction utilizes Samson's exclusive DPX™ fiber technology. Samson's proven DPX fiber technology has the best abrasion and cut resistance of all high performance fibers, so rope durability is excellent. Quantum-8 has multiple marine uses.

It can be used as a high performance tug working line, a floating tug stem line, a typhoon or vessel mooring line, an offshore messenger or pick-up line.

Quantum-8 has an orange urethane coating for high visibility as well as additional abrasion resistance.

Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

### Features:

- \* A blend of polyester and HMPE
- Good grip on capstans and H-bitts
- Excellent single drum spooling capabilities

## Applications

- Wire replacement
- Secondary mooring lines
- Berge and dredge working lines
- Tracer tug winch lines
- General working lines
- Heavy lift slings
- Rig tow lines
- Lowering/Lifting lines

## Technical Specifications

- Specific Gravity: 1.0 (Floats in seawater)
- Elastic Elongation %: At % of break strength  
10%.....0.97%, 20%.....1.15%, 30%.....1.29%
- Splicing Procedures Required:  
Eye splice - 8 strand/Class II rope  
End for end splice - 8 strand/Class II rope

## How to order: CODE

Tug and mooring line, 8-strand, Polyester/Dyneema  
SK-75, Quantum 8, DIAM x LENGTH, WITH FURTHER  
SPECIFICATION INCLUDING END PREPARATION & KINDS  
OF CERTIFICATE

Unit Per Mtr.

CODE	Size		Strength ISO/BS EN919	Weight	kg/100M
	Dia.	Circ.			
	Inch	mm	*MBS*/Metric Tonnes	kg/100M	
21 18 01	1	24	3	29.0	34.2
02	1-1/8	28	3-1/2	38.6	43.3
03	1-1/4	30	3-3/4	51.7	53.4
04	1-5/16	32	4	58.5	59.1
06	1-1/2	36	4-1/2	83.0	79.8
21 18 07	1-5/8	40	5	99.8	95.8
08	1-3/4	44	5-1/2	115.0	113
09	2	48	6	146.0	152
10	2-1/8	52	6-1/2	163.0	165
11	2-1/4	56	7	179.0	173
21 18 12	2-3/8	57	7-1/8	200.0	204
13	2-1/2	60	7-1/2	220.0	225
14	2-5/8	64	8	240.0	247
15	2-3/4	68	8-1/2	263.0	271
16	3	72	9	311.0	324
21 18 17	3-1/4	80	10	363.0	378

Remark: \*MBS denotes Minimum Breaking Strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Tug and Mooring Lines, 12-strand Blend of Polyester & HMPE, "Quantum-12™"

Cuerda de Tirar y Amarrear a 12 Trenzas

12本燃りムアリングライン 十二股拖船及繩泊索



Much like Quantum-8, Quantum-12 is a lightweight, high strength, floating rope that can grip a capstan or H-bitt. The DPX fiber provides superior abrasion and cut resistance, but with a higher coefficient of friction than similar high performance ropes such as AmSteel®-Blue. The 12-strand construction provides added flexibility, improved handling and easy spliceability. Green Samthane coating provides excellent visibility and additional abrasion resistance.



Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

## Applications

- Wire replacement
- Offshore messenger or pick-up line
- For use on H-bitts, capstans and winches
- General working lines
- Rig row lines

## Technical Specifications

- Specific Gravity: 0.99 (Floats)
- Elastic Elongation %: At % of break strength  
10%.....0.65%, 20%.....0.75%, 30%.....0.90%
- Splicing Procedures Required:  
Eye splice - 12 strand/Class II rope  
End for end splice - 12 strand/Class II rope

## How to order: CODE

Tug and mooring line, 12-strand, Polyester/Dyneema  
SK-75, Quantum-12, DIAM x LENGTH, WITH FURTHER  
SPECIFICATION INCLUDING END PREPARATION & KINDS  
OF CERTIFICATE

Unit Per Mtr.

CODE	Size		Strength ISO/BS EN919	Weight	kg/100M
	Dia.	Circ.			
	Inch	mm	*MBS*/Metric Tonnes	kg/100M	
21 18 31	1	24	3	37.4	31.2
32	1-1/8	28	3-1/2	47.6	37.9
33	1-1/4	30	3-3/4	59.4	46.1
34	1-5/16	32	4	66.2	49.1
35	1-5/8	40	5	103.0	74.4
21 18 36	1-3/4	44	5-1/2	120.0	90.5
37	2	48	6	158.0	118.0
38	2-1/8	52	6-1/2	180.0	133.0
39	2-1/4	56	7	203.0	149.0
40	2-3/8	57	7-1/8	228.0	167.0
21 18 41	2-1/2	60	7-1/2	255.0	186.0
42	2-5/8	64	8	284.0	205.0
43	2-3/4	68	8-1/2	309.0	231.0
44	3	72	9	366.0	366.0
45	3-1/4	80	10	428.0	317.0

Remark: \*MBS denotes Minimum Breaking Strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Winch Lines with 100% Dyneema "Turbo-RC™"

Cuerda para Cabrestante con Dyneema al 100% "Turbo-RC"

ウインチライン 100% Dyneema "Turbo-RC" 紞車繩



Turbo-RC has the firmness and low stretch of wire, yet only 1/6th the weight. The durable 'turbo' braided jacket is very cut and abrasion resistant, and protects the 12-strand single braid strength-member core.



Turbo-RC spools on winches easily, does not rust or "fish hook" like wire rope, and it floats. Turbo-RC is specially designed for improved service life in applications where creep results from long-term static loads. Both cover and core are

coated with a Samthane coating.

A standard cover repair kit is available and easy to field apply. This product design requires a specialized splicing technique. Standard length is 200 mtr. Please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

#### Features

- Excellent single drum spooling capabilities
- Lightweight handling
- Superior drum compression resistance
- Retains hard round shape during use
- Protective cover with Dyneema provides superior wear characteristics

#### Applications

- Single or split drum winch primary mooring lines for various vessels
- Wire replacement in commercial fishing trawl systems
- "Tugger" winch lines for AHVs
- Deep water lifting projects

#### Technical Specifications

- Specific Gravity: 0.98
- Elastic Elongation %: At % of break strength  
10%.....0.30%, 20%.....0.50%, 30%.....0.80%
- Splicing Procedures Required: Eye splice - Product specific

#### How to order : CODE

Mooring line, with 100% Dyneema, "Turbo-RC", DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size			Strength ISO/BS EN919 *MBS*/Metric Tonnes	Unit Per Mtr. kg/100M
	Dia.		Circ.		
	Inch	mm	Inch		
21 18 51	1	24	3	44.0	37.9
52	1-1/8	28	3-1/2	56.7	47.8
53	1-1/4	30	3-3/4	68.0	59.5
54	1-3/8	34	4-1/8	83.9	73.7
55	1-1/2	36	4-1/2	95.3	88.5
21 18 56	1-5/8	40	5	113.0	99.7
57	1-3/4	44	5-1/2	138.0	127.0
58	2	48	6	166.0	150.0
59	2-1/8	52	6-1/2	177.0	164.0
60	2-1/4	56	7	204.0	187.0

Remark: \*MBS denotes Minimum Breaking Strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Mooring Lines, 12-strand

### Polyester Jacketed "Turbo-EPX™"

Manguera de cubierta de poliéster "Turbo-EPX"

ポリエスチルカバーホーザー "Turbo-EPX" 聚酯外罩 "Turbo-EPX"



Lightweight, high strength, round and firm winch rope.



Turbo-EPX is a unique jacketed product. This durable jacket provides grip and protects the strength member core from degradation. The core and jacket of Turbo-EPX work in harmony, preventing excess cover

slack during mooring operations, which translates into longer service life. This construction creates a firm, round, torque-free rope, much like wire rope, but at 1/6th the weight. Turbo-EPX delivers excellent performance on all types of winches and offers much better resistance to flex and tension fatigue than wire. Coating improves service life, reduces snagging, enhances abrasion resistance, and prevents contamination. Standard length is 200 mtr.

#### Features

- Good grip on winch drums
- Heat resistant
- Lightweight for safer and easier handling
- Superior winch performance with firm, round construction

#### Applications

- Wire replacement - jacketed
- Deepwater lowering and lifting lines
- Primary mooring lines
- Winch based tug working lines
- Wire replacement - tug working pendant

#### Technical Specifications

- Specific Gravity: 1.13
- Elastic Elongation %: At % of break strength  
10%.....0.30%, 20%.....0.50%, 30%.....0.80%
- Splicing Procedures Required: Eye splice - Product specific

#### How to order: CODE

Mooring line, 12-strand, Polyester jacketed, "Turbo-EPX" DIAM x LENGTH, WITH FURTHER DETAILS INCLUDING END PREPARATION & KINDS OF CERTIFICATE

CODE	Size			Strength ISO/BS EN919 *MBS*/Metric Tonnes	Unit Per Mtr. kg/100M
	Dia.		Circ.		
	Inch	mm	Inch		
21 18 71	1	24	3	3	44.0
72	1-1/8	28	3-1/2	56.7	52.5
73	1-1/4	30	3-3/4	68.0	66.1
74	1-5/16	32	4	74.8	70.4
75	1-3/8	34	4-1/8	83.9	76.5
21 18 76	1-1/2	36	4-1/2	95.3	96.7
77	1-5/8	40	5	113.0	116.0
78	1-3/4	44	5-1/2	138.0	141.0
79	2	48	6	166.0	174.0
80	2-1/8	52	6-1/2	177.0	187.0
21 18 81	2-1/4	56	7	204.0	214.0

Remark: \*MBS denotes Minimum Breaking Strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Mooring Line, Tug Line & Pendant High-Tenacity Polyester Line

### "HTP-12™"

Cable de amarre, cable de tirar y colgadero de poliéster de alta resistencia "HTP-12"

12 本抱りムアリングライン、タグライン、ペンダント "HTP-12"

十二股系缆、拖缆、HTP-12 浮筒链



HTP-12 is a 12-strand construction that provides optimum performance in static bending situations, making HTP-12 ideal for use where small D/d ratios are common. Made with high-tenacity polyester fiber, HTP-12 provides good flex-fatigue resistance and shock absorption.

Standard Length is 200mtr, and also suitable as a high performance mooring pendant.

### Applications

- Vessel Mooring
- Tug
- Offshore
- General Working Line
- Mainline
- Lifting Slings
- Pendant
- Synthetic Extension Pendants
- Shock Line
- Winch Line
- Working Line

### Features and Benefits

- Good flex-fatigue resistance
- Easy to inspect
- Good shock absorption
- Easy to splice

### Technical Specifications

Fiber: High-tenacity polyester

- Specific Gravity: 1.38
- Elastic Elongation Percentage: At % break strength  
10%.....1.70%, 20%.....3.40%, 30%.....5.80%

Splicing Procedures Required: Round Plait Class I

### How to order: CODE

Mooring line, 12-strand, high-tenacity polyester line, "HTP-12",

DIAM x LENGTH, WITH FURTHER SPECIFICATION

INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Ordering Mooring Pendant, please specify;

Mooring pendant, HTP-12, Type (Single leg or Strop), Diameter Size(mm), Overall Length, Both ends Fabrication (eg. 2mtr soft eye on each end), Minimum Breaking Strength, WITH KINDS OF REQUIRED CERTIFICATE

CODE	Size		ISO 2307 Strength* MBS/Metric Tonnes	Weight kg/100m	Unit Per Mtr.			
	Dia.				Unit Per Mtr.			
	Inch	mm			ISO2307	Spliced		
21 18 82	1-1/2	36	4-1/2	41.6	107			
83	1-5/8	40	5	51.3	138			
84	1-3/4	44	5-1/2	62.1	165			
85	1-7/8	46	5-5/8	65.8	176			
86	2	48	6	75.8	22.5			
21 18 87	2-1/8	52	6-1/2	83.9	251			
88	2-1/4	56	7	97.5	299			
89	2-3/8	57	7-1/8	105	317			
90	2-1/2	60	7-1/2	110	344			
92	2-5/8	64	8	121	384			
21 18 93	2-3/4	68	8-1/2	134	424			
94	2-7/8	70	8-5/8	144	464			
95	3	72	9	150	491			
96	3-1/8	76	9-1/2	164	545			
97	3-3/16	78	9-9/16	180	612			
21 18 98	3-7/16	84	10-5/16	195	665			

Remark: \*ISO 2307:1995 strength specifications are for unspliced ropes. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

### Tug and Mooring Lines, "Strong Line™"

Línea de remolque y amarre, "Strong Line™"

タグライン&係船索 "ストロングライン"

拖船和系泊缆绳 "Strong Line™"

STRONGLINE™ has a rope construction comprising a parallel core with a braided protective cover. The parallel core produces a far higher strength rope than might be expected for a rope of this diameter and

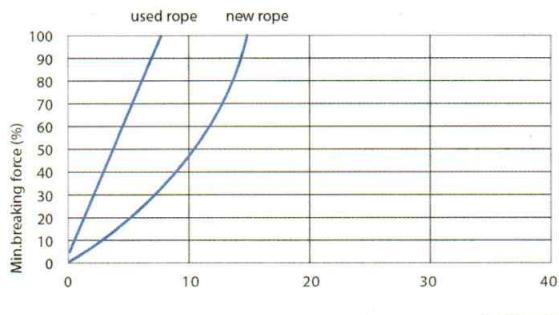


material. The protective cover ensures a long service life due to its excellent resistance against abrasion. Regular maintenance can significantly lengthen the rope service life. STRONGLINE™ can be recycled. The main applications of STRONGLINE™ are towing and mooring.

DNV type approved product: 32 – 112 mm

### Specifications

Specific Gravity	1.38	Construction	Parallel cores with jacket
Material	Polyester	TCLL Value	64.9%
UV-resistance	Excellent	Colour	White
Abrasion Resistance	Excellent	Marker Yarn	Orange
Chemical Resistance	Good	Melting Point	< 1%
Elongation	See graph		
	Approx. 265°C		



CODE	Diam. mm	M.B.F.(kN)		Unit Per Mtr. kg/100 mtr
		ISO2307	Spliced	
21 16 29	32	392	353	76.5
	36	489	440	95
	40	592	533	131
	44	709	638	147
	48	833	750	175
21 16 46	52	967	870	189
	56	1,106	995	227
	60	1,256	1,130	256
	64	1,411	1,270	284
	68	1,578	1,420	307
21 16 70	72	1,744	1,570	367
	76	1,922	1,730	390
21 17 43	80	2,100	1,890	417
	88	2,500	2,250	493
	92	2,722	2,450	528
21 17 46	96	2,922	2,630	560
	100	3,167	2,850	630
	104	3,433	3,090	662
	112	4,056	3,650	788

Name of Mfr.: Lankhorst Ropes

### Primary Mooring Lines for FSRU EverSteel™-X, 100% Dyneema®

Línea de atraque principal para FSRU

浮体式 LNG 受け入れ基地用係留索

浮式液化天然气接收站用系泊缆

EverSteel-X is the first line to be designed specifically for FSRU (Floating Storage Regasification Unit) mooring applications, using Dyneema Max DM20 technology to achieve superior creep performance and flex-fatigue resistance. It is a torque-free 12-strand single braid that is optimized in strength-to-size and strength-to-weight ratios. Size-for-size, it has the same strength as steel, but it's so light, it floats.



With the addition of a Samson proprietary coating, EverSteel-X is designed for long-term, continuous load conditions, and will last for long-term FSRU mooring applications. These features point to EverSteel-X as the best choice for FSRU mooring.

### Features

- Superior creep performance
- Flex-fatigue resistant
- Size-for-size as strong as wire
- Floats in water
- Durable and lightweight
- Made with Dyneema® DM20 fiber

### Application

- Long-term primary mooring line

### Technical Specifications

- Specific Gravity: 0.98
- Elastic Elongation %: At % of break strength  
10%.....0.30%, 20%.....0.55%, 30%.....0.80%

Splicing Procedures Required: 12-strand/Class II rope

### How to order: CODE

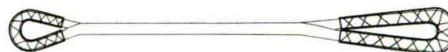
*Mooring rope, EverSteel-X, 12-strand, Dyneema Max. DM-20, for FSRU mooring application, DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE*

Unit Per Mtr.

CODE	Circ. Inch	Size		Strength ISO 2307 Metric Tonnes	Weight kg/100 mtr
		Inch	mm		
21 18 26	5	1-5/8	40	119	92.6
27	5-1/4	1-11/16	42	142	97.9
28	5-1/2	1-3/4	44	154	107
29	6	2	48	178	124
30	7-1/2	2-1/2	60	278	198

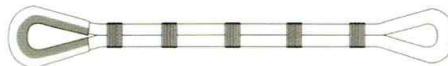
\*For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com).  
Name of Mfr.: Samson

22 mtr may also be requested depending on extreme berth conditions.



### Grommet(Strap)

Standard length is 11 mtr overall length with 2 mtr and 1 mtr soft eyes formed by seizings. The body of the strop is also seized together 3 mtr from each eye lashing. 22 mtr may also be requested depending on extreme berth conditions.



When ordering, please specify the following:

- (A) Material of rope (PP/PE mixed Line, Nylon, Polyester, etc.)
- (B) Construction of rope (8-strand/12-strand/double braided etc.)
- (C) Diam or Circ of the ropes
- (D) Length of the ropes and the desired eye sizes on each end.
- (E) Ship Design Minimum Breaking Load (SDBL) and required Tail Design Break Force (TDBF) based on the criteria according to OCIMF Mooring Equipment Guidelines. (MEG4)

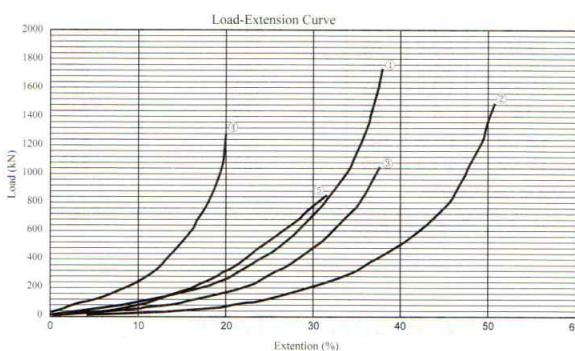
The TDBF of tails should be 125%-130% of ship design MBL. TDBF is tested and defined in the wet condition and accounts for any material strength loss when wet.

### How to order : 21 - 11 - 37

Mooring tail, Material x Construction x Diam or Circ x Length x Eye Overall Size

### Load Elongation Curve (60m/m)

Load Elongation Curve (60 m/m) (荷重伸度曲線) 負重張力曲線



## Mooring Tails (Forerunner, Pendants)

Calabrotes テイルロープ 缆绳尾

### Reasons for Using Mooring Tails

When using mooring ropes, especially for tanker vessels or large vessels, there is a general desirability for the additional elasticity provided by mooring tails. The additional elasticity reduces the loads induced in mooring wires or HMPE lines under dynamic conditions by permitting the ship to respond more favorably to various combinations of wind, wave, and current forces, as well as to ships passing by in close proximity. Tails also tend to distribute the loadings more evenly in the mooring lines in the same service.

The additional elongation of the mooring line system permitted by the tail reduces the risk associated with poor line tending and the frequency and precision of line tending, particularly in berths where large tidal variations in high loading-unloading rates. Tails are also valuable at berths requiring short breast or spring leads as they provide the same effect as long all-wire line systems. And lastly, they facilitate the handling of wire lines by boatman and mooring gangs.

There are two configurations of tail ropes commonly used on board.

### Single-Leg

Standard length is 11 mtr overall length with a 2 mtr soft eye for the outboard end and a 1 mtr soft eye for the inboard end.

## Mooring Pendants

MP-1™

Ramal de fondeo 非自転性係留用ペンダントロープ 防旋转系泊吊绳



MP-1 is a non-rotational rope with excellent abrasion and wear resistance for use as a pendant in vessel mooring applications. It has been proven to provide superior abrasion resistance and strength retention with extensive use.

MP-1 utilizes a polyester/polyolefin blend that provides a 10% lower linear density (lbs./ft.) compared to traditional 100% polyester fiber pendant constructions. This decreased weight makes for easier handling by crew members in mooring situations. MP-1 is verified by ABS according to MEG4.

#### Features:

- 10% lighter than 100% polyester ropes
- High strength,
- Low elongation,
- Hockle-resistant
- Non-rotational,
- Durable,
- Flexible

#### Technical Specifications

Specific Gravity: 1.2

Elastic Elongation %: At % of break strength  
10%.....1.30%, 20%.....1.95%, 30%.....3.05%

#### Splicing Procedures Required:

- Eye splice – 8 strand/Class I rope
- End for end splice – 8 strand/Class I rope

#### How to order : 21 - 11 - 60

Mooring pendant, MP-1, with the following information

Type : Single leg or Grommet Strop  
Size : 72 mm (3 inch circumference)  
Overall Length : 11 mtrs (36 feet)  
Fabrication : 2 mtr (6.5 feet) soft eye one end, and a 1 mtr (3.2 feet) soft eye the other end

Minimum Strength : 104 tons

#### SPECIFY CLASS CERTIFICATION IF REQUIRED

Unit Per Mtr.

Circ. Inch	Size Diam.		Strength ISO 2307	Weight/100 mtr
	Inch	mm	Metric Tonnes	Kilograms
7	2-1/4	56	62.1	177
7-1/2	2-1/2	60	78.9	222
8	2-5/8	64	85.6	241
8-1/2	2-3/4	68	93.3	265
9	3	72	106	293
9-1/2	3-1/8	76	117	321
10-1/8	3-3/8	82	133	369
10-1/2	3-1/2	86	146	409
11-1/4	3-3/4	92	162	467
12	4	96	176	512
12-1/2	4-1/8	100	191	577
13-1/2	4-1/2	110	223	683

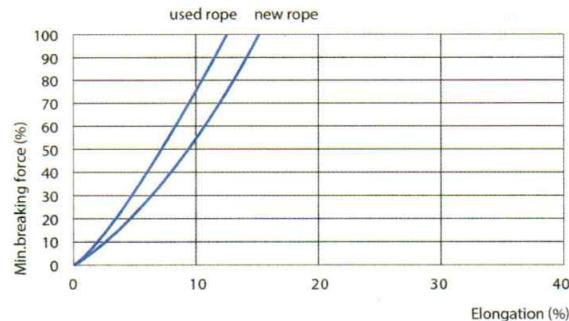
Name of Mfr.: Samson

\*ISO2307 strength specifications are for unspliced rope. For the most up to date specifications visit SamsonRope.com.

Tested in compliance with OCIMF MEG4: 55 – 88 mm  
DNV type approved product: 55 – 88 mm

#### Specifications

Specific Gravity	1.14	Construction	8-strand plaited
UV-resistance	Good	TCLL Value	78.8%
Abrasion Resistance	Very Good	Colour	White
Chemical Resistance	Good	Marker Yarn	Yellow
Elongation	See graph	Water-absorption	<0.5%
Melting Point	Approx. 165°C/ 265°C		



#### Performance

Effective Working Length: 11 m

Diameter mm	MBF kN		Weight 11 mtr/kg
	ISO2307	Spliced/LDBF (OCIMF MEG4)	
48	612	551	23.7
56	823	741	34.2
60	941	847	39.3
62	1,000	900	42.0
64	1,061	955	44.7
68	1,197	1,077	50.3
72	1,334	1,201	56.4
76	1,481	1,333	66.6
80	1,628	1,465	70.4
82	1,701	1,531	73.2
83	1,742	1,568	75.0
84	1,785	1,607	81.4
88	1,964	1,768	89.5
96	2,321	2,089	106.2

Effective Working Length: 22 m

Diameter mm	MBF kN		Weight 11 mtr/kg
	ISO2307	Spliced/LDBF (OCIMF MEG4)	
60	941	847	64.7
72	1,334	1,201	93.0
80	1,628	1,465	119.2
88	1,964	1,768	144.1
96	2,321	2,089	171.1

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories/fittings. The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

Name of Mfr. : Lankhorst Ropes

#### How to order: 21 - 11 - 39

Mooring tail, Euroflex, 8-strand, DIAM x FINISHED LENGTH,  
EYE SPLICING SIZE



## 8-strand Mooring Tails

### Euroflex®

Cola dde Amarre con 8 Trenzas "Euroflex"

ムアリングテール "Euroflex" 船用八股缆绳尾

The Euroflex® mooring tails surpass nylon tails in quality. Moreover, the rope does not lose a large portion of its dry MBF when wet. As the strength is higher than that of nylon, a smaller diameter of rope can be used, providing better handling. Made of polyester and polyolefin composite yarns, the standard length is 11 m (effective working length). For those circumstances where more stretch is required, 22 mtr length is available. Both versions are fitted with two protected and spliced eyes of 2 mtr and 1 mtr respectively.

## 8-strand Mooring Tails

### Karat® Maxi Plus

Colas de amarre de 8 cabos, Karat® Maxi Plus

カラットマキシ ムアリングテール

8 股系泊尾缆

KARAT® MAXI has very high strength/weight ratio which allows substantial size reductions and ease in handling. It has the following performance features, \*the same properties but offer a higher TDBF and much better abrasion resistance, \*Higher strength than the conventional floating tails, \*No loss of strength when wet, \*High energy absorption, \*Manufactured acc. to ISO and OCIMF MEG4 Guideline, \*EStalon™ is a polyester/polypropylene melt mixture, Eurolefin™ in the outer yarn. The standard length is 11 mtrs, but other lengths are available upon request. Ropes are tested and certified by Lloyd's Register type approval.



#### Specifications

Melting Point:	185°C
Specific Gravity:	0.99
Water absorption:	None
Reduction of TDBF when wet:	None
Elongation, new tail:	14-16%
On request: larger diameter,different color, 12 stand	

Diameter (mm)	Circumference (inch)	Weight kg/100 m	TDBF	
			(tonnes)	(kN)
40	5"	80.00	35.10	344.00
44	5-1/2"	97.00	41.90	411.00
48	6"	115.00	49.20	483.00
52	6-1/2"	136.00	57.10	560.00
56	7"	157.00	65.60	644.00
60	7-1/2"	181.00	74.50	731.00
64	8"	206.00	84.30	827.00
68	8-1/2"	232.00	94.50	927.00
72	9"	260.00	105.30	1,033.00
76	9-1/2"	291.00	116.00	1,138.00
80	10"	321.00	126.70	1,243.00
84	10-1/2"	333.00	133.90	1,314.00
88	11"	389.00	141.10	1,384.00
96	12"	463.00	166.90	1,637.00
104	13"	544.00	187.00	1,834.00
112	14"	630.00	215.00	2,109.00

#### How to order: 21 - 11 - 61

Mooring tail rope, Karat® maxi plus, 8-strand, DIAM X FINISHD LENGTH, EYE SPLICING SIZE

## Synthetic Emergency Tow-Off Pendants "Vulcan"

Colgadero sintético de remolque de emergencia Vulcan

非常時曳航用繊維ロープ 急拖航纤维缆绳



Emergency tow-off pendants (ETOPs), commonly referred to as "fire wires," provide a means of towing the ship away from the dock in the event of a fire. Samson developed Vulcan, a synthetic alternative to traditional wire rope fire wires. Vulcan is significantly lighter and eliminates "fish hooks," which are broken wires that protrude from the wire rope and result in hand injuries. Maintenance costs are also reduced when using synthetic ropes compared to wire ropes. Vulcan is made with aramid fiber and has a proprietary fire-resistant coating that meets the OCIMF-required breaking strength after exposure to flames and a high-temperature environment.

#### Features and Benefits:

- 60 to 70% (2/3rd) lighter than wire
- Abrasion resistant
- Easily stored when not in use
- Easy to adjust
- Heat and flame resistant
- Lightweight
- No lubrication necessary
- Reduced mooring-related injuries and claims
- Specific Gravity: 1.39

#### How to order: 21 - 18 - 99

Emergency Tow-Off Pendant, "Vulcan", DIAM(SEE BELOW TABLE) x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE

#### Heated Rope Strengths

Rope Dia (mm)	Weight 100 mtr/kg	AVG Strength (kg)	Min. Strength (kg)	ISO2307 Strength (Metric Tons)
24	44.6	33,600	30,200	33.6
30	91.7	61,700	55,500	61.7
32	103	68,000	61,200	68
42	159	95,700	86,100	95.7
46	186	112,000	101,000	112
52	222	139,000	125,000	139
56	250	149,000	134,000	149
60	286	170,000	153,000	170

Remark: ISO strength specifications are for unspliced strength. For the most up to date specifications visit [SamsonRope.com](http://SamsonRope.com)

Name of Mfr.: Samson

## Chafe Protections for Mooring Line

Protección contra Roces para Cuerda de Amarre

係留索用シェーフプロテクション 繩泊索防磨保護

Chafe protection maximizes the service life of the ropes, protecting ropes from abrasion and cutting damage. All chafe options can be factory-installed on your ropes prior to shipment from the mfr's plants, or are available in bulk for field installation by certified personnel.

When replacing wire ropes with synthetics, it is important to prepare or repair the surfaces of deck equipment damaged by the wire rope. Chocks, fairleads, bollards, bits or other hardware contacting the rope need to be smooth and free of rust to ensure the synthetic ropes achieve longest service life possible.

The followings are typical examples of Chafe protections:

**Dynalene**

Dynalene is a unique product that protects the strength member from abrasion, yet allows the rope to be easily inspected for both internal and external fiber wear. Braided from cut and abrasion resistant Dyneema fiber, Dynalene is permanently spliced over the rope, and acts as a sacrificial cover protecting the rope from abrasion and wear in mooring and offshore applications.

Dynalene is fully repairable in the field, does not absorb water, and floats. It is easy to install anywhere on the rope.

- \* Fixed or adjustable for easy positioning
  - \* Light weight / Floats
  - \* Easy inspection without removing
  - \* Excellent durability
- Available in:  
 Small (fits 7/8" to 1-1/4" dia rope)  
 Medium (fits 1-5/16" to 1-5/8" dia rope)  
 Large (fits 1-3/4" to 3" dia rope)  
 Extra large (fits 3-1/4" to 4" dia rope)



cover and remove around the eye with Velcro tape. Material is Polyester.

Unit Per Pcs.

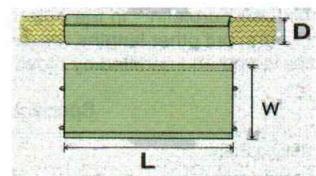
CODE	Size	Applicable Rope Size
21 18 46	S	40 mm - 52 mm
47	M	53 mm - 69 mm
48	L	70 mm - 90 mm

**Hawser Protectors**

Protector de calabros

ホーサープロテクター

缆绳保护装置



Designed to cover the synthetic hawser to protect from friction on the surface of steel chock, enable hawser to make long-term use. Easily attached and removed around hawser and can be fixed around chocks by the hook and loop fastener. Normally the width will be determined by rope diameter and please specify the length when ordering.

Properties: Melting Point, Polyester, 240°C

**How to order: CODE**

Please specify;

- The product name of Hawser rope/Structure/Diameter
- Length of protector

Unit Per Pcs.

CODE	Hawser rope diameter (mm)	Width (mm)
21 46 21	41 ~ 50	250
21 46 22	51 ~ 60	300
21 46 23	61 ~ 70	350
21 46 24	71 ~ 80	400
21 46 25	81 ~ 90	450
21 46 26	91 ~ 100	500

**DC Gard**

DC Gard is a tightly braided cover construction of Dyneema fiber that is spliced onto the strength member to protect it from wear and abrasion in specific areas. Designed for use in applications where frequent handling and use put a premium on rope protection and resistance to snagging, DC Gard provides the maximum protection for synthetic fiber ropes.

- \* Fixed or adjustable for easy positioning
  - \* Light and flexible / Floats
  - \* Can be removed for rope inspection
  - \* Cut resistant
  - \* Superior durability
- Available in ;  
 Size C: (fits 1" to 1-1/4" ropes)  
 Size D: (fits 1-5/16" to 1-3/4" ropes)  
 Size E: (fits 1-7/8" to 2-1/2" ropes)  
 Size F: (fits 2-5/8" to 3-1/8" ropes)

**DC Moor-Gard S**

With a 100% HMPE fiber cover construction as DC Gard, DC Moor-Gard is a tubular sleeve solution that provides sliding protection from wear and abrasion. Standard length is 10' and the ends are coated with urethane.

- \* Fixed or adjustable for easy positioning
  - \* Light and flexible / Floats
  - \* Easily removed for rope inspection
  - \* Cut resistant
  - \* Superior durability
- Size E (fits 1" to 1-3/4" ropes)  
 Size F (fits 1-7/8" to 2-1/4" ropes)  
 Size G (fits 2-3/8" to 3-1/4" ropes)

**How to order: 21 - 18 - 91**

Chafe protection, Dyneema fiber, TYPE OF CHAFE PROTECTION (Dynalene, DC Gard, or DC Moor-Gard) FIXED OR ADJUSTABLE TYPE, SIZE OF ROPE TO BE INSTALLED, Length of coverage desired.

**Eye Protectors for Hawser**

Protectores oculares para Hawser

ホーサー用アイプロテクター

缆绳护眼装置

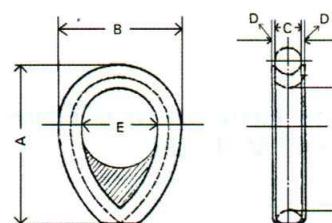
Designed to cover the synthetic hawser's "eye" to protect from friction on the surface of steel bitt at shore side. Basically, eye covers are preinstalled at factory and difficult to replace when get damaged, but this product will easily

**Hawser Thimbles for Mooring**

Manguito de protección de estacas

ホーサー用シンプル 系泊缆保护套

Reinforced with Triangular Plate

**How to order: CODE**

Hawser thimble, ungalvanized, heavy duty, for rope diam mm with triangle plate

CODE	Diam. of rope	Unit Per Pcs.				
		A	B	C	D	E
21 46 01	50	240	180	50	10	115
02	55	260	200	55	10	125
03	60	280	220	60	12	135
04	65	300	240	65	13	145
05	70	340	270	70	14	165
21 46 06	75	360	280	75	16	165
07	80	380	300	80	16	175
08	90	400	320	90	16	190
09	100	400	320	100	16	200

## Closed Chock Covers

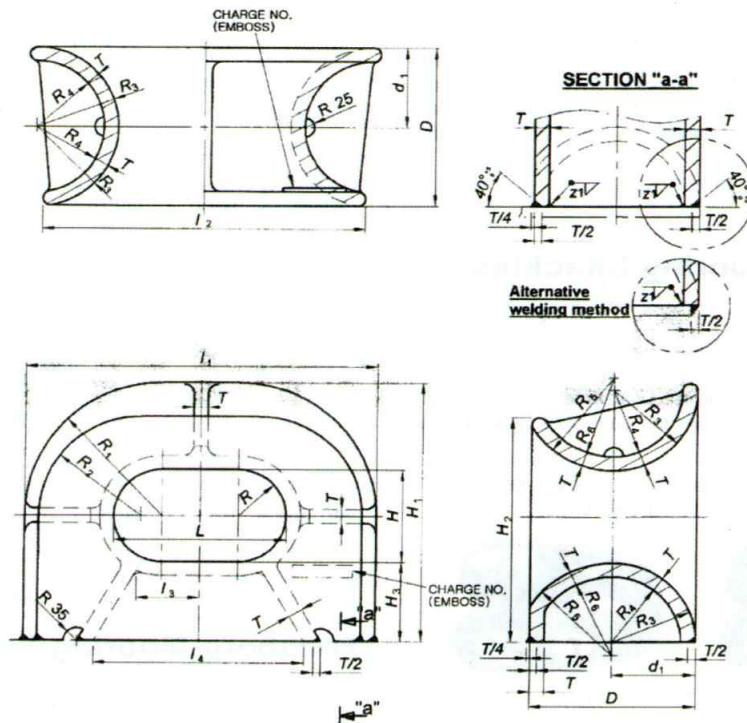
Tapas de Calzo Cerradas

チヨックカバー 封闭式底座盖



Designed to cover the closed chock to protect mooring ropes from friction with the surface of steel chock. Mainly used for tankers or large bulk carriers which use UHMPE rope for mooring. Easily installed and removed around chock by Velcro tape, and mostly used UHMPE or polyester material.

\*Not applicable for bulwark chocks.



Nominal size (L x H x D)	L1	L2	L3	L4	H1	H2	H3	R	R1	R2	R3	R4	R5	R6	D1	K	T	Max. SWL (ton)	Rope Dia.
250 x 200 x 214	488	453	76	265	427	368	108	100	219	160	108	86	150	128	108	15	22	23	18
300 x 250 x 286	614	565	89	330	551	481	144	125	282	212	144	118	180	154	144	15	26	40	24
350 x 250 x 286	716	660	114	403	601	525	168	125	308	232	168	138	200	170	168	15	30	56	28
400 x 250 x 381	820	754	139	475	652	553	192	125	335	236	192	156	250	214	192	20	36	70	32
450 x 250 x 381	870	804	164	524	652	553	192	125	335	236	192	156	250	214	192	20	36	72	32
500 x 250 x 381	920	854	189	574	652	553	192	125	335	236	192	156	250	214	192	20	36	76	32
400 x 250 x 428	870	796	139	500	701	609	216	125	360	268	216	178	250	212	216	25	38	90	36
450 x 250 x 428	920	846	164	550	701	609	216	125	360	268	216	178	250	212	216	25	38	93	36
500 x 250 x 428	970	896	189	600	701	609	216	125	360	268	216	178	250	212	216	25	38	95	36
500 x 400 x 428	970	896	176	600	851	769	216	200	435	343	216	178	250	212	216	25	38	91	36
500 x 250 x 525A	1068	1000	190	652	796	676	264	125	409	266	264	224	320	280	264	25	40	117	44
500 x 400 x 525A	1068	1000	193	652	948	825	264	200	484	361	264	224	320	280	264	25	40	118	44
500 x 250 x 525B	1074	1000	176	652	801	680	264	125	412	291	264	218	320	274	264	25	46	144	44
500 x 400 x 525B	1074	1000	179	652	951	830	264	200	487	366	264	218	320	274	264	25	46	141	44

How to order: 21 - 18 - 49

Closed Chock Cover, SPECIFY MATERIALS, NOMINAL SIZES (L X H X D) OF CLOSED CHOCK

## Moorings Links and Shackles

Grilletes de Enlace (Unión)

ムアリングリンク シャックル 缆绳尾连接卸扣

Specially designed to connect the forerunner of a synthetic rope with a wire rope when mooring. These links are important in preventing any friction or coiling in the connection between the wire rope and the mooring tail and they make the mooring process a great deal easier.

### According to OCIMF Mooring Equipment Guideline (MEG4)

Most manufacturers will supply connection devices with a safety factor of three (breaking load three times the SWL). Joining shackles' SWL should be equal to or greater than the mooring lines' WLL.

SWL should not exceed working load range. WLL values for wires and synthetic lines differ (55% and 50% of ship design MBL respectively). Matching shackle SWL to WLL is not necessary. Minimum safety factor of three is recommended. Consider mooring system design to minimize connecting device failure risk.

21

Rope &amp; Hawsns

## Boss Link - Mooring Shackles

Grilletes (Eslabón) Tipo Boss ボスリンクシャックル 缆绳尾连接卸扣

A stainless steel mooring link (anti-corrosive), used as connection between steel wire ropes or HMPE fiber ropes and mooring tails. Can be delivered with or without roller. The shackles are proof-tested under the control of DNV GL and carry DNV GL type approval.

Recommended working load limit: 50% of the specified MBL  
Normal working load: 20% of the specified MBL



With Bolt

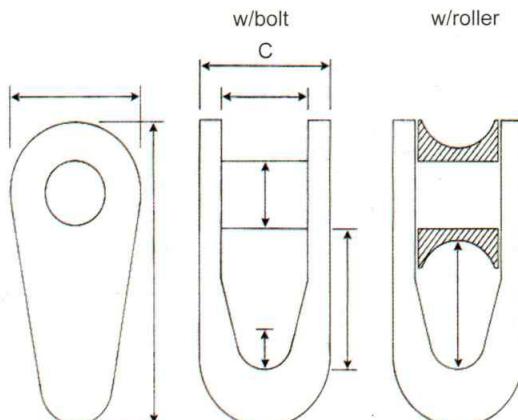


With Roller

### Suitable Rope Size

Timm Boss Link 120T/140T  
for mooring tail 6-10" circ. 48mm – 80mm diameter

Timm Boss Link 165T/180T/250T  
for mooring tail 10-14" circ. 80mm – 112 mm diameter



### With Bolt

Unit Per Pcs.

CODE	21 11 41	21 11 45	21 11 42	21 11 46	21 11 47
Model	120 T	140 T	165 T	180 T	250 T
Size mm					
A	134	134	150	150	150
B	283	283	325	325	325
C	127	127	165	165	165
D	100	100	120	120	120
E	64	64	75	75	75
F	134	134	150	150	150
G	32	32	34	34	34
MBL Ton	120	140	165	180	250
ABL Ton	148.1	148.1	187.1	187.1	269
Weight	11.6	11.6	19.6	19.6	19.6

Name of Mfr.: Eurocable Holland B.V.

### With Roller

Unit Per Pcs.

CODE	21 11 43	21 11 48	21 11 44	21 11 49	21 11 50
Model	120 T	140 T	165 T	180 T	250 T
Size mm					
A	134	134	150	150	150
B	283	283	325	325	325
C	127	127	165	165	165
D	100	100	120	120	120
E	64	64	75	75	75
F2	124	124	138	138	138
G	32	32	34	34	34
MBL Ton	120	140	165	180	250
ABL Ton	148.1	148.1	187.1	187.1	269
Weight	15.4	15.4	24.8	24.8	24.8

Name of Mfr.: Eurocable Holland B.V.

## Tonsberg Mooring Links

Grilletes (Eslabón) "Tonsberg"

トンズバーグリンク

缆绳尾连接卸扣



Galvanized steel mooring link of compact design typically utilised as connection between wire rope and fibre tail. Stocked in four sizes 90T, 120T, 180T and 250T. 300T can be supplied on special request. Steel wire rope around the body-fibre rope around the bolt. Each link is proof-tested and certified by DNV Type Approval, compliant to OCIMF MEG4 Guidelines.



Unit Per Pcs.

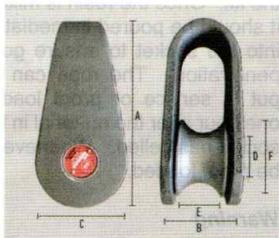
CODE	Type	Dimensions mm						Proof Load tons	Breaking Load tons	Weight kg
		A	B	C	D	E	R			
21 11 51	90T	285	115	136	65	75	22	30	90	11.2
	52	324	142	150	75	90	28	40	120	16.9
	53	350	184	160	85	120	30	60	180	25.0
	54	363	196	174	85	120	35	83	250	29.1

Name of Mfr.: Europe Marine A/S

## Mandal Fairlead Shackles

Grillettes Tipo Mandal  
マンダルフェアリードシャックル 缆绳尾连接卸扣

Stainless steel mooring shackle with sleek shape designed to pass easily through fairleads. Available in two sizes 90M and 120M. Steel wire rope around the sheave - fibre rope around the body. Each shackle is proof tested and certified by DNV Type Approval, compliant to OCIMF MEG4 Guidelines.



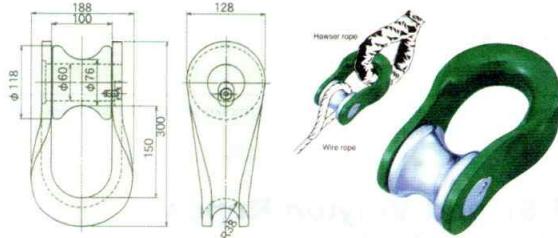
CODE	Type	Dimensions mm						Proof Loadad tons	Breaking Load tons	Weight kg	
		A	B	C	D	E	R				
21 11 56	90M	255	97	120	67	68	34	30	90	7.8	
	57	120M	300	122	130	82	90	45	40	120	13.3

Name of Mfr.: Europe Marine A/S

## H & W Mooring Shackles

Grillettes de Amarre H & W H & W シャックル H & W 系泊錠

Made of alloy steel designed to satisfy the crucial needs of vessel for a safe mooring operation with high reliability and economical efficiency. Light weight, high durability, and applicable for forerunner size from 72 mm to 100 mm. Shackles are tested and certified by NK.



CODE	Dimensions mm						S.W.L tons	Nom. B/S tons	Weight Kg
	A	B	C	D	E	R			
21 11 58	300	132	128	76	100	50	68.5	173	13.5

Name of Mfr.: Kansai Industrial Co. Ltd.

## Soft Mooring Shackles "Link-It"

Grillette de Amarre Blando "Link-It"

ボタンノット式係船索用ソフトシャックル

"リングイット"

软式系泊卸扣 "Link-It"



A button-knot soft shackle made from Samson's AmSteel®-Blue, providing an easy to use, lightweight connection method. Replacing steel shackle or other connection types, Link-It will not corrode or rust, has short connection lengths, and can even be used as an overload indicator. Link-It comes with an attached tag with rating information included.

Fiber: HMPE	Applications Include:
Specific Gravity: 0.98 (floats)	> Pendant/mainline connection
Construction: 12-strand	> Pendant eye handle
Colour: Blue	> Messenger/pendant connection
	> Emergency bridle connection
	> Drum termination
	> Backer/mainline connection

Minimum Strength Rating* Pounds/Mt	Overall Shackle Length (Closed) Inches/mtr	Number of Loops	Base Rope Diameter Inches/mm	Minimum Bend Diameter Inches/mm	Knot Diameter Inch/mm
63,700 lb/28.9 mt	11/0.3	1	1/2 / 12	1.3/33	2.6/66
127,000 lb/57.5 mt	11/0.3	2	1/2 / 12	1.3/33	2.6/66
163,000 lb/73.8 mt	20/0.5	1	7/8 / 22	2.2/55.9	4.6/117
204,000 lb/92.4 mt	24/0.6	1	1 / 24	2.5/63.5	5.3/135
275,000 lb/125 mt	25/0.6	1	1-1/8 / 28	2.8/71.1	6.0/152
324,000 lb/147 mt	20/0.5	2	7/8 / 22	2.2/55.9	4.6/117
405,000 lb/184 mt	24/0.6	2	1 / 24	2.5/63.5	5.3/135
437,000 lb/198 mt	33/0.9	1	1-1/2 / 36	3.8/96.5	8.0/203
497,000 lb/226 mt	36/0.9	1	1-5/8 / 40	4.1/104	8.7/221
497,000 lb/226 mt	48/1.2	1	1-5/8 / 40	4.1/104	8.7/221
524,000 lb/238 mt	25/0.6	2	1-1/16 / 26	2.7/68.6	9.9/252
575,000 lb/261 mt	25/0.6	2	1-1/8 / 28	2.8/71.1	6.0/152
693,000 lb/314 mt	44/1.1	1	2 / 48	5.0/127	10.8/274
792,000 lb/359 mt	30/0.8	2	1-3/8 / 34	3.4/86.4	7.4/188

Remark\*: Strengths are based on minimum D/d ratio of 2.5 between the Bend Diameter and the Base Rope Nominal Diameter. Use of Link-It below a D/d ratio of 2.5 is not recommended by Samson.

Name of Mfr.: Samson

### How to order: 21 - 11 - 55

Button-knot soft shackle "Link-It", MINIMUM STRENGTH RATING, OVERALL SHACKLE LENGTH, NUMBER OF LOOPS, BASE ROPE DIAMETER, MINIMUM BEND DIAMETER



### Ling-It Plus

Same specification with "Link-It" but comes in a single loop design with full length chafe protection and attached tag with rating information included.

Minimum Strength Rating* Pounds/Mt	Overall Shackle Length (Closed) Inches/mtr	Base Rope Diameter Inches/mm	Minimum Bend Diameter Inches/mm	Knot Diameter Inch/mm
63,700 lb/28.9 mt	11/0.3	1/2 / 12	1.3/33.0	2.6/66
92,600 lb/42.0 mt	14/0.4	5/8 / 16	1.6/40.6	3.2/81
126,000 lb/57.0 mt	17/0.4	3/4 / 18	1.9/48.3	3.9/99
144,000 lb/65.2 mt	18/0.5	13/16 / 20	2.0/50.8	4.3/109
163,000 lb/73.8 mt	19/0.5	7/8 / 22	2.2/55.9	4.6/117
204,000 lb/92.4 mt	22/0.6	1 / 24	2.5/63.5	5.3/135
275,000 lb/125 mt	25/0.6	1-1/8 / 28	2.8/71.1	6.0/152
353,000 lb/160 mt	29/0.7	1-5/16 / 32	3.3/83.8	7.0/178
437,000 lb/198 mt	33/0.8	1-1/2 / 36	3.8/96.5	8.0/203
497,000 lb/226 mt	36/0.9	1-5/8 / 40	4.1/104	8.7/221
559,000 lb/254 mt	39/1.0	1-3/4 / 44	4.4/112	9.4/239
693,000 lb/314 mt	44/1.1	2 / 48	5.0/127	10.8/274

Remark\*: Strengths are based on minimum D/d ratio of 2.5 between the Bend Diameter and the Base Rope Nominal Diameter. Use of Link-It Plus below a D/d ratio of 2.5 is not recommended by Samson.

Name of Mfr.: Samson

**How to order: 21 - 11 - 59**

Button-knot soft shackle "Link-It Plus", MINIMUM STRENGTH RATING, OVERALL SHACKLE LENGTH, BASE ROPE DIAMETER, MINIMUM BEND DIAMETER

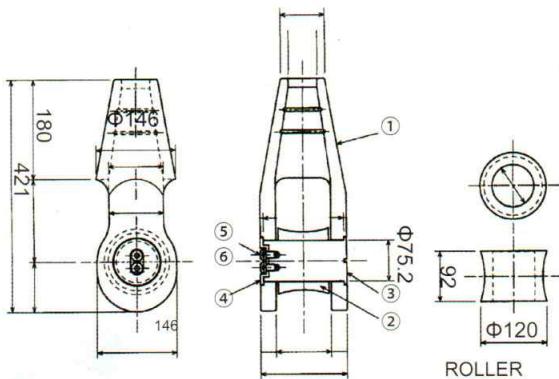
**Mooring Wire Sockets, Roller Pin Type**

Escaje de Amarre Tipo Rodillo

ローラーピン式ワイヤーソケット 缆绳用开口索节

Quite new style of mooring shackle as substitute for traditional connection of a synthetic tail rope with a wire rope when mooring. Attaching this new type Roller Socket at the end of mooring wire rope you can connect directly to mooring tail rope (Forerunner) by its unique construction combined conventional mooring shackles and wire rope socket. You don't need to buy standard mooring shackle anymore if this new style roller shackle is attached to mooring wire.

Roller shackle is made from carbon and alloy steel with pin and roller which are detachable for connecting tail rope. Normally the roller shackle will be supplied pre-attached to mooring wire rope by factory, but it is possible to attach by ship's workers using a unique socketing media "Wirelock".



21 11 71

Mooring wire socket, roller pin type 0-42  
carbon and alloy steel for 42 mm dia wire rope

Pc.

powder. Upon mixing, the resin will turn to a greenish turquoise color. If the mix remains a pale straw yellow color, do not use the kit. Once the resin is mixed, it should be poured immediately into the socket to ensure good penetration. The rope can be put in service or proof loaded one hour after the material in the socket has gelled. Whenever possible, the assembly should be proof loaded.

**Warning**

- \* Incorrect use of the socketing resin can result in an unsafe termination which may lead to serious injury, death, or property damage.
- \* Do not use the resin with stainless steel rope in salt water environment applications. Consult with the manufacturer.
- \* Use only soft annealed iron wire for seizing.
- \* Do not use any other wire (copper, brass, stainless, etc.) for seizing.
- \* Never use an assembly until the resin has gelled and fully cured.
- \* Remove any non-metallic coating from the broom area.
- \* Sockets with large grooves need to have those grooves filled before use with the resin.

**Caution**

- \* This resin, in liquid state, is flammable.
- \* Chemicals used in this product can give off toxic fumes and can burn eyes and skin.
- \* Use only in well-ventilated work areas.
- \* Never breathe fumes directly or for extended time.
- \* Always wear safety glasses to protect eyes.
- \* Always wear gloves to protect hands.
- \* Avoid direct contact with skin anywhere.

CODE	Contents	Unit
21 11 75	250 cc	Set
76	500 cc	"
77	1,000 cc	"

Approvals: Lloyds Register of Shipping, Det Norske Veritas, United States Coast Guard, Registro Italiano Navale

**3-Strand Vinylon Ropes  
(Kuremona Rope)**

Cuerda Vinylon 3 Cordones

三つ撚り 1号 クレモナロープ

三股线维尼纶绳

Made from a compound of vinyl chloride and vinylidene from limestone. Spun into cotton-like soft thread and stranded into rope. Easy-to-tighten due to its flexibility and also easy to handle.

**How to order: CODE**

Vinyロン rope, 3-strand, DIAM x LENGTH

Unit Per C/L

CODE	200 mtrs			Breaking Strength KN	220 mtrs		
	Size Cir. inch	Diam. mm	Weight kg/coil		Size Cir. inch	Diam. mm	Weight kg/coil
21 12 01	1	8	7.1	6.86	21 12 21	1	8
02	1-1/8	9	9.6	8.83	22	1-1/8	9
03	1-1/4	10	11.6	11.8	23	1-1/4	10
04	1-1/2	12	15.6	14.7	24	1-1/2	12
05	1-3/4	14	21.6	21.6	25	1-3/4	14

(to be continued)

**Socketing Resin "Wirelock"**

Resina para Enclavar la Terminación de cable Metálico "Wirelock"

ソケット加工樹脂 "ワイヤーロック"

缆绳修补树脂胶

The suitable resin for socketing wire rope terminations. This wire rope assemblies are 100% efficient when used with steel wire rope, galvanized wire ropes.



Pass the wire rope through the end hole of roller socket, and measure the rope ends to be socketed. The rope end should be seized at the sufficient length so that the ends of the unlaid wires (from the strands) will be at the top of the socket basket. The wire rope is secured in a vice directly below the seizing to allow the strands to be unlaid to the seizing. Plasticine or clay based putty, i.e., window or glazing putty, is required to seal the base of the socket prior to pouring, thus, preventing resin leakage which may cause voids. All of the liquid resin should be placed in the mixing container and then all of the power added to it (or vice versa) before mixing. Always mix all of the resin with all of the

200 mtrs				220 mtrs				
CODE	Size		Weight kg/coil	Breaking Strength KN	CODE	Size		Weight kg/coil
	Cir. inch	Diam. mm				Cir. inch	Diam. mm	
21 12 06	2	16	29.0	25.5	21 12 26	2	16	31.9
07	2-1/4	18	36.0	32.4	27	2-1/4	18	39.6
08	2-1/2	20	47.6	37.3	28	2-1/2	20	52.4
09	2-3/4	22	58.0	47.1	29	2-3/4	22	63.8
10	3	24	69.0	54.9	30	3	24	75.9
21 12 11	3-1/4	26	79.8	62.8	21 12 31	3-1/4	26	87.8
12	3-1/2	28	93.4	72.6	32	3-1/2	28	102.7
13	3-3/4	30	106.6	80.4	33	3-3/4	30	117.3
14	4	32	122.2	93.2	34	4	32	134.4

### 3-Strand Tarred Hemp Ropes

Cuerda de Cáñamo Alquitaranado 3 Cordones

三つ撚りタールロープ 三股油麻绳

For general use on board a ship. All ropes are of a 3 strand lay and supplied in 200 mtr/110 fathom length coils.



#### How to order: CODE

Hemp rope, 3-strand tarred, DIAM x LENGTH

Size				Size				Unit Per Mtr.	
CODE	Cir. inch	Diam. mm	Weight kg/coil	CODE	Cir. inch	Diam. mm	Weight kg/coil		
							Cir. inch	Diam. mm	
21 12 51	3/4	6	6.5	21 12 55	1-1/2	12	25.6		
52	1	8	11.3	56	1-3/4	14	34.8		
53	1-1/8	9	14.4	57	2	16	45.5		
54	1-1/4	10	17.8	58	2-1/4	18	57.6		

### 3-Strand Heaving Lines

Guia de 3 Cordones

三つ撚りヒービングライン 三股丙纶抛绳

Specially designed as a heaving line which is easy to handle for a variety of jobs. When ordering, please specify the rope material which you require, as listed in the code table below. All heaving lines are supplied in 200 mtr/110 fathom length coils.



#### How to order: CODE

Heaving line, 3-strand, MATERIAL, DIAM x LENGTH

Polypropylene Heaving				Manila Heaving				Cotton Heaving			
CODE	Size		CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 12 71	1	8	21 12 76	1	8	21 12 81	1	8	21 13 21	3/4	6
72	1-1/8	9	77	1-1/8	9	82	1-1/8	9	22	1	8
73	1-1/4	10	78	1-1/4	10	83	1-1/4	10	23	1-1/8	9
Vinylon Heaving				Nylon Heaving							
CODE	Size		CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 12 86	1	8	21 12 91	1	8	21 12 81	1	8	21 13 31	3/4	6
87	1-1/8	9	92	1-1/8	9	82	1-1/8	9	32	1	8
88	1-1/4	10	93	1-1/4	10	83	1-1/4	10	33	1-1/8	9

### Signal Halyards (Flag Line)

Driza フラッグライン

信号旗索(旗绳)



These halyards are braided for easy handling. When ordering, select from the following 4 kinds of materials. Furnished in lengths of 300 meters.

#### How to order: CODE

Signal halyard (flag line), MATERIAL, DIAM x LENGTH

Unit Per Mtr.

Polypropylene				Cotton				
CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 01	3/4	6	21 13 06	3/4	6	21 13 26	3/4	6
02	1	8	07	1	8	27	1	8
03	1-1/8	9	08	1-1/8	9	28	1-1/8	9
Vinylon				Nylon				
CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 11	3/4	6	21 13 16	3/4	6	21 13 36	3/4	6
12	1	8	17	1	8	37	1	8
13	1-1/8	9	18	1-1/8	9	38	1-1/8	9

### Log Lines

Sondaleza ログライン 测速绳

All braided, non-kinkable lines for logging purposes. All ropes are 300 meters in length.



Please specify the rope material you require from the coded table below.

#### How to order: CODE

Log line, MATERIAL, DIAM x LENGTH

Unit Per Mtr.

Polypropylene				Cotton				
CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 21	3/4	6	21 13 26	3/4	6	21 13 31	3/4	6
22	1	8	27	1	8	32	1	8
23	1-1/8	9	28	1-1/8	9	33	1-1/8	9
Vinylon				Nylon				
CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 31	3/4	6	21 13 36	3/4	6	37	1	8
32	1	8	38	1-1/8	9	38	1-1/8	9
33	1-1/8	9						

### 3-Strand Polyethylene Tiger Ropes

Cuerda Tigre Polietileno 3 Cordones

標識ロープ(虎ロープ) 三股丙纶虎斑绳



Made of polyethylene, braided with two yellow coloured and one black coloured strand. Suitable to indicate the boundaries of a dangerous zone. Furnished in 200 mtr length coils.

#### How to order: CODE

Tiger rope, 3-strand, polyethylene, black/yellow, DIAM x LENGTH

CODE	Size		Weight kg/coil	Breaking Strength (kN)	Unit Per Mtr.
	Cir. inch	Diam. mm			
21 13 51	3/4	6	3.5	3.92	
52	1	8	6.4	7.85	
53	1-1/4	10	10.0	10.8	
54	1-1/2	12	14.8	12.7	
55	1-3/4	14	19.8	16.7	
21 13 56	2	16	25.0	21.6	
57	2-1/4	18	32.0	27.5	
58	2-1/2	20	40.0	35.3	
59	2-3/4	22	48.0	43.1	
60	3	24	58.0	50.0	

## Seizing Twines

Piola (Hilo Ligada)

シージングトワイン 合股绳

Made of manila or polypropylene. Both are supplied in 2.5 kg balls. When ordering, please specify whether polypropylene or manila twine will be required.

CODE	Material	Diam.	Unit
21 14 21 22	Polypropylene Manila	3 mm 3 mm	2.5 kg Ball 2.5 kg Ball

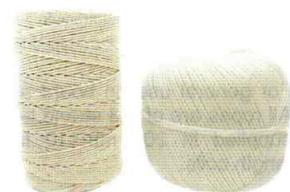


## Sail Twines

Hilo de Vela セールトワイン

未涂蜡合股绳

All purpose, uniform, strong woven, cotton or vinylon twine. Please specify whether you require waxed or unwaxed twine when ordering.

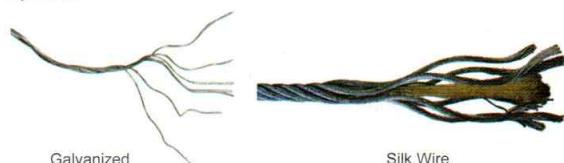


Unwaxed (Seaming Twine) Cotton			Waxed (Roping Twine) Vinylon		
CODE	Weight	Unit	CODE	Weight	Unit
21 14 31 32	225 grms 225 grms	Hank Ball	21 14 33 34	225 grms 225 grms	Hank Ball

## Wire Ropes - Small Diameter for Seizing

Alambre Ligada シージング用小径ワイヤーロープ 细丝弯

For seizing large ropes or riggings. Two kinds of wire are shown here: an ordinary galvanized type and a spring type which returns to its original shape after removing. When ordering, please specify the kind of wire and diameter required.



Galvanized				Silk Wire			
Unit Per Kgs.				Unit Per Mtr.			
CODE	Construction	Diam. mm	STD. Coil	CODE	Construction	Diam. mm	STD Coil
21 14 51 52 53	7-strand " "	2 3 4	5 kg " "	21 14 55 56 57 58	6 x 7 6 x 7 6 x 19 6 x 19	2 3 4 5	100 mtr " " "

## Seizing Wires

Alambre de Hierro 鉄線 铁丝

Galvanized or ungalvanized wire for seizing large rope ends or riggings.



CODE	Diam.	Weight and Unit
21 14 11 12	3 mm 4 mm	100 gram in Hank

Galvanized Wire		Kg per 1,000 m	Ungalvanized Wire		Unit Per Kgs.
CODE	Diam mm		CODE	Diam mm	
67 11 01	0.23	0.326	67 11 51	0.23	
02	0.26	0.417	52	0.26	
03	0.29	0.518	53	0.29	
04	0.32	0.631	54	0.32	
05	0.35	0.755	55	0.35	
67 11 06	0.40	0.987	67 11 56	0.40	
07	0.45	1.25	57	0.45	
08	0.50	1.54	58	0.50	
09	0.55	1.87	59	0.55	
10	0.60	2.22	60	0.60	
67 11 11	0.65	2.60	67 11 61	0.65	
12	0.70	3.02	62	0.70	
13	0.80	3.95	63	0.80	
14	0.90	4.99	64	0.90	
15	1.0	6.17	65	1.0	
67 11 16	1.2	8.88	67 11 66	1.2	
17	1.4	12.1	67	1.4	
18	1.6	15.8	68	1.6	
19	1.8	20.0	69	1.8	
20	2.0	24.7	70	2.0	
67 11 21	2.3	32.6	67 11 71	2.3	
22	2.6	41.7	72	2.6	
23	2.9	51.8	73	2.9	
24	3.2	63.1	74	3.2	
25	3.5	75.5	75	3.5	
67 11 26	4.0	98.7	67 11 76	4.0	
27	4.5	125	77	4.5	
28	5.0	154	78	5.0	
29	5.5	187	79	5.5	
30	6.0	222	80	6.0	
67 11 31	6.5	260	67 11 81	6.5	

## Elastic Trapeze Cords

Cuerda de sujeción elástica

固縛用伸縮コード

固定用弾力繩



Elastic cord similar to rubber band but more durable and stronger. Use for fastening the items very easily. Attached with hook and clamp.

21 14 61	Elastic Trapeze Cord, 10 mm dia with hook and clamp	Mtr.
21 14 62	Hooks for Elastic Trapeze Cord	Pc.
21 14 63	Rope Clamps for Elastic Trapeze Cord	Pc.

## Marine Oakum

Estopa Filástica オーカム 麻絮

Available spun or unspun. The primary use of marine oakum is for caulking the seams of wooden vessels and the wooden decks of all types of marine structures. Both spun and unspun oakum are waterproof and essential for all marine work.



Unit Per Kgs.

CODE	Description	Unit Per Kgs.
21 14 71	Spun marine oakum	
72	Unspun marine oakum	

## Cordage

Name	Descriptions of Cordage
Point Line	Small rope used for reef points. Usually about inch to 1-3/4 inch in size. Generally referred to by the number of threads, 15 to 21, used in making it.
Ratlines	Small ropes stretched horizontally between shrouds to form foot and hand holds when going aloft. Sized to forward and after shrouds, clove hitched around intermediate shrouds.
Houseline	Soft laid three yarn stuff used for general purpose. May be tarred or untarred.
Boat Lacing	Line by which a boat's canvas cover, or other canvas gear, is secured in place.
Marline	Superior kind of spunyarn laid up left-handed.
Spunyarn	Spunyarn is a small stuff and is the cheapest and most commonly used for seizing, service, etc., where neatness is not important. It is laid up loosely, is left-handed, 2, 3 or 4 stranded, and is tarred.

## Specifications of Cordage

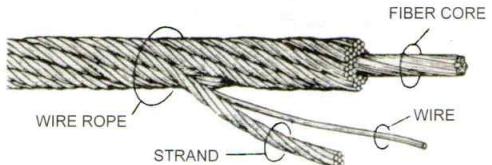
Name	Material	Number of Strand	Number of Thread & Diameter
Point Line	Manila	3	12 thread 9 mm 15 " 10 21 " 12
Ratlines	Tarred Hemp of Manila	3	6 thread 6 mm 9 " 8 12 " 9
Houseline	Manila	3	5 mm 6
Sash Cord	Cotton	Senette Lay	6 mm 8 9
Wrapping Twine	Jute & Hemp	Spun	1.5 - 2.0 mm
Boat Lacing	Manila	3	6 thread 6 mm
Manila	Hemp	-	3 lay 2 mm 2 " 3 4
Spunyarn	Jute	Spun	2 lay 4 mm

## Steel Wire Ropes

Cables de Acero - Mediciar - ワイヤーロープ 綱纜

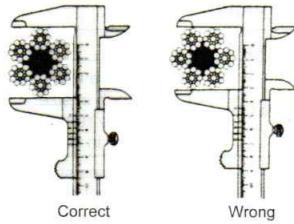
Wire rope construction is indicated primarily by the number of strands and the number of wires in each strand. For instance a 6 x 24 steel wire rope is composed of 6 main strands and each strand has 24 main wires. These numbers are modified as follows:

- 1) The arrangement of wires in the strand, i.e. Filler, Seale, Warrington, etc.
- 2) Lay of stranding, i.e. regular, lang, right, left, etc.
- 3) Outer covering, i.e. galvanized, ungalvanized, etc.
- 4) Type of center, i.e. hemp core, I.W.R.C. (Independent Wire Rope Core) and strand.



## Gauging Wire Rope

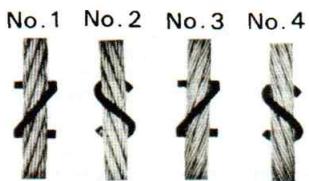
The diameter of a wire rope is the diameter of the circle which will enclose all of its strands. When measuring a wire rope by caliper, care should be taken to measure the correct circumference of diameter of all the strands, not areas where there are two adjacent strands. See diagram above.



## The Lays of Wire Rope

The picture right shows and indicates the regular and Lang's lay of wires.

- 1) Right hand regular lay
- 2) Left hand regular lay
- 3) Right hand Lang's lay
- 4) Left hand Lang's lay



Wire ropes can be either Lang's lay or Regular lay (Ordinary lay).

Lang's lay construction is one in which the wires in the strand are laid in the same direction as the strands are laid into the rope.

The advantage of using Lang's lay is that a rope so constructed offers a better wearing surface when in use, and, therefore, can be expected in many cases to survive for a longer period than a rope made with regular lay. Lang's lay ropes should never be used when one end of the rope is free to rotate.

Regular lay construction is one in which the strand wires are laid in one direction, and the completed strands laid into the rope in the opposite direction.

Nearly all ropes are supplied right-hand lay, but left-hand lay is occasionally required.

## Nominal Tensile Strength

Referring to JIS G-3525

Galvanized Wire Rope		Un-galvanized Wire Rope	
Class	Tensile Strength N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Class	Tensile Strength N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )
E	-	E	1,320 (135)
G	1,470 (150)	G	-
A	1,620 (165)	A	1,620 (165)
B	1,770 (180)	B	1,770 (180)

## API - 9A

Nominal Grade	Class	Tensile Strength
180	IPS	1,770 Nm <sup>2</sup>
190	EIPS	1,860
200	-	1,960
220	-	2,160

IPS : Improved Plow Steel

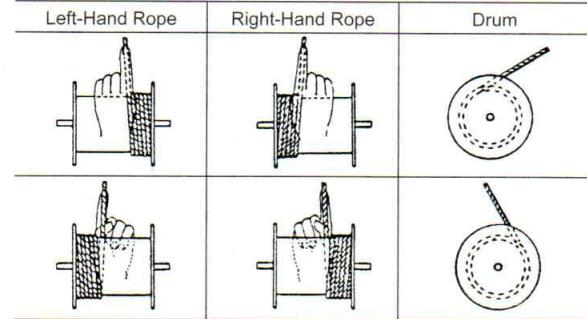
EIPS: Extra Improved Plow Steel

## Winding Wire Rope

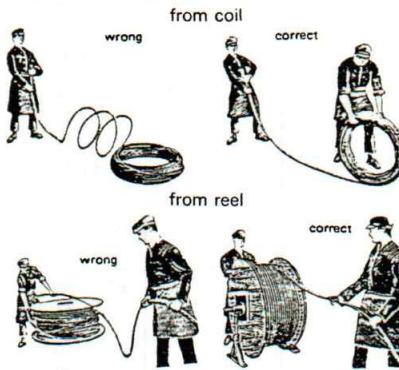
For left-handed drum = right-hand rope  
For right-handed drum = left-hand rope

21

Rope &amp; Hawssers



## Unwinding Wire Rope

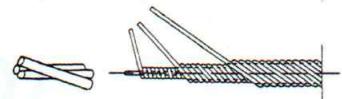


## Cross Section of Wire rope

Construcción de Cable de Acero ロープの構成による分類 钢丝绳

### A) Cross Lay (Conventional Lay)

The strands of a so-called conventional wire rope have equal-sized wires in all layers. Each layer has different length of lay and the wires of one layer cross the wires of the underlying layer.



When the strands are spun in this manner the wires of the individual layers are in point contact with each other. In conventional ropes, all wires, except for the center wire, are of the same length.

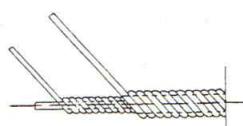
Construction	6 x 7	6 x 12
Illustration		
6 x 19		
6 x 24		
6 x 37		

### B) Parallel Lay (Equal Lay)

The strands of equal lay ropes have wires of varying sizes laid in such a way that the wires of one layer are parallel with and supported over their total length by wires in the underlying

layers. All wires have the same length of lay, and are laid up in a single operation.

The use of equal lay strands avoids deformation, internal wear and secondary bending stress which result from the point contact between the wires in the conventional type. In most fields of application, therefore, equal lay ropes have proved to have a longer life than conventional ropes. The following types of construction are equal lay : Warrington, Seale, Filler and combinations of the same.



#### 6 x 19 Classification

6 x S(19)	6 x W(19)	6 x Fi(25)	6 x WS(26)
6 x S(19) IWRC	6 x W(19) IWRC	6 x Fi(25) IWRC	6 x WS(26) IWRC

#### 6 x 37 Classification

6xFi(29)	6xWS (31)	6xWS(36)	6xWS(41)
6xFi(29) IWRC	6xWS(31) IWRC	6xWS(36) IWRC	6xWS(41) IWRC

#### Wire Arrangement

6 x 24  
6 x (9+15) = 144 wires



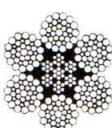
6 x WS (36)  
6 x [1+7+(7+7)+14] = 216 wires



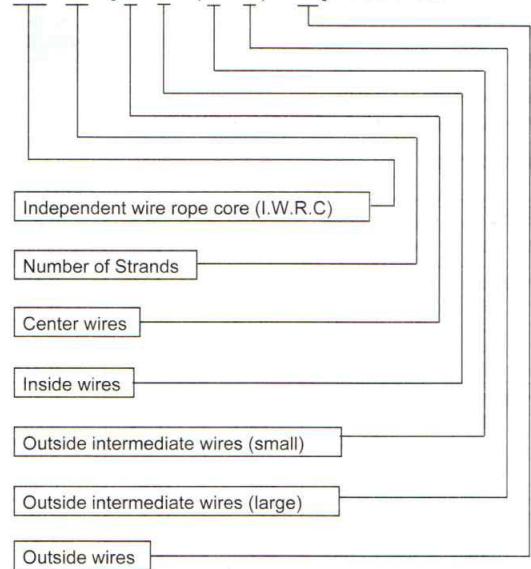
6 x 37  
6 x (1+6+12+18) = 222 wires



IWRC  
6 x WS (36)



$$7 \times 7 + 6 \times [1 + 7 + (7 + 7) + 14] = 265 \text{ wires}$$



#### Wire Rope Selection:

1. Wire ropes are available in various types and constructions, each having specific uses. Therefore, it is important to select the rope according to the intended application. Namely, it is necessary to see what properties are required for the rope to be used correctly. The properties cover breaking strength, flexibility, resistance to bending fatigue, anti-friction, resistance to deformation, non-rotation and anti-corrosion. In most cases, the key point of selecting the rope for a particular application is consideration of the above properties.
2. Selection by features
  - 1) Where breaking strength is important, IWRC parallel lay ropes are recommended. For example:  
IWRC 6 x Fi(25), IWRC 6 x Fi(29), IWRC 6 x WS(36).
  - 2) Where flexibility is important, FC (Fibre Core) cross lay ropes are recommended.  
For example: 6 x 24FC, 6 x 37FC.
  - 3) Where resistance to bending fatigue is important, ropes made of strands with as many wires as possible are recommended.  
For example: FC 6 x WS(36), FC 6 x WS(41).
  - 4) Where anti-friction is important, ropes consisting of outer strands made of thick wires are recommended.  
For example: 6 x S(19), 6 x Fi(21), 6 x Fi(25).
  - 5) In case resistance to deformation is important, parallel lay ropes are recommended.  
For example: IWRC 6 x WS(31), U4 x SeS(39).
  - 6) Where non-rotation is required, non-rotating wire ropes are recommended.  
For example: U4 x SeS(39), 18 x 7, 19 x 7, etc.
  - 7) Where anti-corrosion is important, galvanized or stainless steel ropes are recommended.

## Wire Rope 6 x 7

### 6 x (1+6)

Applications: Standing rigging.

#### How to order: CODE

Wire rope, galvanized, 6 x 7, DIAM x LENGTH

#### Galvanized

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per Mtr.
200 mtr	220 mtr			kN	tf		
<b>21 20 01</b>	3/4"	6	18.8	1.92	0.134		
02		6.3	21.0	2.14	0.147		
03	1"	8	33.8	3.45	0.237		
04		9	42.8	4.36	0.300		
05	1-1/4"	10	52.8	5.38	0.371		
<b>21 20 06</b>		11.2	66.2	6.75	0.465		
07	1-1/2"	12	75.4	7.69	0.534		
08		12.5	82.5	8.41	0.579		
09	1-3/4"	14	103	10.6	0.727		
10	2"	16	135	13.8	0.950		
<b>21 20 11</b>	2-1/4"	18	171	17.4	1.20		
12	2-1/2"	20	211	21.5	1.48		
13	2-3/4"	22	254	25.9	1.80		
14		22.4	265	27.0	1.86		
15	3"	24	302	30.8	2.14		
<b>21 20 16</b>		25	330	33.6	2.32		
17	3-1/4"	26	354	36.1	2.51		
18	3-1/2"	28	414	42.2	2.91		
19	3-3/4"	30	475	48.4	3.34		

(1,470 N/mm<sup>2</sup>)



FC

## Ungalvanized

Unit Per C/L

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
200 mtr	220 mtr			kN	tf	
<b>21 21 51</b>	<b>21 21 76</b>	1/2"	4	8.64	0.88	0.058
52	77		5	13.5	1.38	0.091
53	78	3/4"	6	19.4	1.98	0.131
54	79		6.3	21.4	2.19	0.144
55	80	1"	8	34.6	3.53	0.233
<b>21 21 56</b>	<b>21 21 81</b>	9	43.8	4.46	0.295	
57	82	1-1/4"	10	54.0	5.51	0.364
58	83		11.2	67.8	6.91	0.457
59	84	1-1/2"	12	77.8	7.93	0.524
60	85		12.5	84.4	8.61	0.569
<b>21 21 61</b>	<b>21 21 86</b>	1-3/4"	14	106	10.8	0.713
62	87	2"	16	138	14.1	0.932
63	88	2-1/4"	18	175	17.8	1.18
64	89	2-1/2"	20	216	22.0	1.46
65	90	2-3/4"	22	261	26.6	1.76
<b>21 21 66</b>	<b>21 21 91</b>	3"	22.4	271	27.6	1.83
67	92		24	311	31.7	2.10
68	93		25	338	34.4	2.28
69	94	3-1/4"	26	365	37.2	2.46
70	95	3-1/2"	28	424	43.2	2.85
<b>21 21 71</b>	<b>21 21 96</b>	3-3/4"	30	486	49.6	3.28

(1,620 N/mm<sup>2</sup>)



FC

## Wire Rope 6 x 19

### 6 x (1+6+12)

Applications: Running rigging.



FC

How to order: CODE  
Wire rope, galvanized, 6 x 19, DIAM x LENGTH

#### Galvanized

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per C/L
200 mtr	220 mtr			kN	tf		
<b>21 21 01</b>	<b>21 21 26</b>	1/2"	4	8.03	0.82	0.058	
02	27	5	12.5	1.28	0.091		
03	28	3/4"	6	17.8	1.82	0.131	
04	29		6.3	19.9	2.03	0.144	
05	30	1"	8	32.1	3.28	0.233	
<b>21 21 06</b>	<b>21 21 31</b>	9	40.7	4.15	0.295		
07	32	1-1/4"	10	50.2	5.12	0.364	
08	33		11.2	63.0	6.42	0.457	
09	34	1-1/2"	12	72.3	7.37	0.524	
10	35		12.5	78.4	8.00	0.569	
<b>21 21 11</b>	<b>21 21 36</b>	1-3/4"	14	98.4	10.0	0.713	
12	37	2"	16	128	13.1	0.932	
13	38	2-1/4"	18	163	16.6	1.18	
14	39	2-1/2"	20	201	20.5	1.46	
15	40	2-3/4"	22	240	24.5	1.76	
<b>21 21 16</b>	<b>21 21 41</b>	22.4	252	25.7	1.83		
17	42	3"	24	286	29.2	2.10	
18	43		25	314	32.0	2.28	
19	44	3-1/4"	26	336	34.3	2.46	
20	45	3-1/2"	28	393	40.1	2.85	
<b>21 21 21</b>	<b>21 21 46</b>	3-3/4"	30	452	46.1	3.28	

(1,470 N/mm<sup>2</sup>)

#### Galvanized

How to order: CODE  
Wire rope, galvanized, 6 x 19, DIAM x LENGTH

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per C/L
200 mtr	220 mtr			kN	tf		
<b>21 22 01</b>	<b>21 22 51</b>	3/4"	6	16.4	1.67	0.120	
02	52	6.3	18.0	1.84	0.132		
03	53	1"	8	29.3	2.99	0.212	
04	54	9	37.1	3.78	0.269		
05	55	1-1/4"	10	45.8	4.67	0.332	
<b>21 22 06</b>	<b>21 22 56</b>	11.2	57.4	5.86	0.416		
07	57	12	65.9	6.72	0.478		
08	58	12.5	71.5	7.30	0.519		
09	59	14	89.7	9.15	0.651		
10	60	16	117	12.0	0.850		
<b>21 22 11</b>	<b>21 22 61</b>	18	148	15.1	1.08		
12	62	20	183	18.7	1.33		
13	63	22	221	22.5	1.61		
14	64	23	230	23.4	1.67		
15	65	24	264	26.9	1.91		
<b>21 22 16</b>	<b>21 22 66</b>	25	286	29.2	2.08		
17	67	26	308	31.4	2.24		
18	68	28	359	36.6	2.60		
19	69	30	412	42.0	2.99		
20	70	31.5	454	46.3	3.29		
<b>21 22 21</b>	<b>21 22 71</b>	4"	32	466	47.5	3.40	
22	72	33.5	514	52.4	3.73		
23	73	34	526	53.6	3.84		
24	74	35.5	577	58.8	4.18		
25	75	36	589	60.1	4.30		
<b>21 22 26</b>	<b>21 22 76</b>	37.5	644	65.7	4.67		
27	77	38	657	67.0	4.79		
28	78	40	732	74.7	5.31		

(1,470 N/mm<sup>2</sup>)

#### How to order: CODE

Wire rope, ungalvanized, 6 x 19, DIAM x LENGTH

**How to order: CODE**

Wire rope, ungalvanized, 6 x 24, DIAM x LENGTH

**Ungalvanized**

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per C/L
200 mtr	220 mtr			kN	tf		
21 23 01	21 23 51	3/4"	6	16.4	1.81	0.120	
	02		6.3	19.5	1.99	0.132	
	03		8	31.6	3.22	0.212	
	04		9	39.9	4.07	0.269	
	05		10	49.3	5.03	0.332	
21 23 06	21 23 56	1-1/4"	11.2	61.8	6.31	0.416	
	07		12	71.0	7.24	0.478	
	08		12.5	77.0	7.85	0.519	
	09		14	96.6	9.85	0.651	
	10		16	126	12.9	0.850	
21 23 11	21 23 61	2-1/4"	18	160	16.3	1.08	
	12		20	197	20.1	1.33	
	13		22	220	24.3	1.61	
	14		22.4	247	25.2	1.67	
	15		24	262	28.9	1.91	
21 23 16	21 23 66	3-1/4"	25	308	31.4	2.08	
	17		26	332	33.9	2.24	
	18		28	387	39.4	2.60	
	19		30	444	45.2	2.99	
	20		31.5	489	49.9	3.29	
21 23 21	21 23 71	4"	32	466	51.4	3.40	
	22		33.5	553	56.4	3.73	
	23		34	569	58.0	3.84	
	24		35.5	621	63.4	4.18	
	25		36	637	65.0	4.30	
21 23 26	21 23 76	4-3/4"	37.5	693	70.7	4.67	
	27		38	656	72.4	4.79	
	28		40	789	80.4	5.31	

(1,620 N/mm<sup>2</sup>)**Wire Rope 6 x 37****6 x (1+6+12+18)**

Applications: Running rigging, Boat falls, Winches, Cranes, Safety ropes, Hoists, Mooring, Slings

**How to order: CODE**

Wire rope, galvanized, 6 x 37 DIAM x LENGTH

**Galvanized**

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per C/L
200 mtr	220 mtr			kN	tf		
21 25 01	21 25 51	3/4"	6	17.7	1.80	0.129	
	02		6.3	19.6	2.00	0.143	
	03		8	31.6	3.22	0.230	
	04		9	40.0	4.08	0.291	
	05		10	49.4	5.03	0.359	
21 25 06	21 25 56	1-1/2"	11.2	61.9	6.31	0.451	
	07		12	71.1	7.25	0.517	
	08		12.5	77.1	7.86	0.561	
	09		14	96.7	9.86	0.704	
	10		16	126	12.9	0.920	
21 25 11	21 25 61	2-1/4"	18	160	16.3	1.16	
	12		20	197	20.1	1.44	
	13		22	237	24.2	1.74	
	14		22.4	248	25.3	1.80	
	15		24	284	29.0	2.07	

(to be continued)

21 25 16	21 25 66		25	308	31.5	2.25
17	67	3-1/4"	26	330	33.7	2.43
18	68	3-1/2"	28	387	39.5	2.82
19	69	3-3/4"	30	444	45.3	3.23
20	70		31.5	490	49.9	3.57
21 25 21	21 25 71	4"	32	501	51.1	3.68
22	72		33.5	554	56.5	4.03
23	73	4-1/4"	34	566	57.7	4.15
24	74		35.5	622	63.4	4.53
25	75	4-1/2"	36	634	64.7	4.66
21 25 26	21 25 76		37.5	694	70.8	5.05
27	77	4-3/4"	38	707	72.1	5.19
28	78	5"	40	790	80.5	5.75
29	79	5-1/4"	42	863	88.0	6.34
30	80		42.5	892	90.9	6.49
21 25 31	21 25 81	5-1/2"	44	947	96.6	6.96
32	82		45	1,000	102.0	7.28
33	83	5-3/4"	46	1,040	106.0	7.60
34	84		47.5	1,110	114.0	8.11
35	85	6"	48	1,128	115.0	8.28
21 25 36	21 25 86	6-1/4"	50	1,230	126.0	8.98

(1,470 N/mm<sup>2</sup>)

**Wire Rope 6 x Fi(25)****6 x [1+6+(6)+12]**

Applications: Cranes, Winches, Derricks, Hoists

**How to order: CODE**

Wire rope, ungalvanized, 6 x Fi(25) DIAM x LENGTH FC

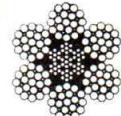
21 27 71	4-1/2"	36	855	87.2	5.57
72		37.5	931	94.9	6.05
73	4-3/4"	38	952	97.1	6.21
74	5"	40	1,060	108.0	6.88

(1,770 N/mm<sup>2</sup>)**Ungalvanized**

CODE 200 mtr	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 27 01	1-1/4"	10	58.1	5.92	0.386
	02	11.2	72.8	7.43	0.484
	03	12	83.6	8.52	0.555
	04	12.5	90.7	9.25	0.603
	05	14	114	11.6	0.756
21 27 06	2"	16	149	15.2	0.988
	07	18	188	19.2	1.25
	08	20	232	23.7	1.54
	09	22	280	28.6	1.87
	10	22.4	291	29.7	1.94
21 27 11	3"	24	333	34.0	2.22
	12	25	363	37.0	2.41
	13	26	391	39.9	2.61
	14	28	455	46.4	3.02
	15	30	532	53.3	3.47
21 27 16	31.5	576	58.7	3.83	
	17	32	593	60.5	3.95
	18	33.5	652	66.4	4.33
	19	34	670	68.3	4.46
	20	35.5	732	74.6	4.86
21 27 21	4-1/2"	36	751	76.6	5.00
	22	37.5	816	83.3	5.42
	23	38	837	85.3	5.57
	24	40	929	94.7	6.17

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x Fi(25)IWRC****7x7+6x[1+6+(6)+12]**

Applications: Cranes, Anchor handling

**How to order: CODE**Wire rope, ungalvanized,  
6 x Fi(25)/WRC DIAM x LENGTH

IWRC

**Ungalvanized**

CODE 200 mtr	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 27 51	1-1/4"	10	66.2	6.75	0.430
		11.2	83.0	8.47	0.539
	1-1/2"	12	94.9	9.68	0.619
	54	12.5	103	10.5	0.672
	55	14	130	13.2	0.843
21 27 56	2"	16	169	17.3	1.10
	57	18	214	21.9	1.39
	58	20	265	27.0	1.72
	59	22	319	32.5	2.08
	60	22.4	332	33.9	2.16
21 27 61	3"	24	380	38.7	2.48
	62	25	414	42.2	2.69
	63	26	446	45.5	2.91
	64	28	519	52.9	3.37
	65	30	596	60.7	3.87
21 27 66	31.5	657	67.0	4.27	
	67	32	676	68.9	4.40
	68	33.5	743	75.7	4.83
	69	34	762	77.7	4.97
	70	35.5	834	85.1	5.42

(to be continued)

**Wire Rope 6 x Fi(29)****6 x [1+7+(7)+14]**

Applications: Cranes, Winches, Derricks, Hoists

**How to order: CODE**

Wire rope, ungalvanized, 6 x Fi(29) DIAM x LENGTH

**Ungalvanized**

CODE 200 mtr	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 28 01	1-1/4"	10	59.2	6.04	0.396
	02	11.2	74.3	7.58	0.496
	03	12	85.1	8.68	0.570
	04	12.5	92.5	9.44	0.618
	05	14	116	11.8	0.776
21 28 06	2"	16	152	15.5	1.01
	07	18	192	19.6	1.28
	08	20	237	24.2	1.58
	09	22	286	29.2	1.92
	10	22.4	297	30.3	1.99
21 28 11	3"	24	340	34.7	2.28
	12	25	370	37.8	2.47
	13	26	399	40.7	2.68
	14	28	464	47.4	3.10
	15	30	533	54.4	3.56
21 28 16	31.5	588	59.9	3.93	
	17	32	605	61.7	4.05
	18	33.5	665	67.8	4.44
	19	34	684	69.7	4.58
	20	35.5	746	76.1	4.99
21 28 21	4-1/2"	36	766	78.1	5.13
	22	37.5	833	84.9	5.57
	23	38	853	87.0	5.72
	24	40	948	96.6	6.33

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x Fi(29)IWRC****7x7+6x[1+7+(7)+14]**

Applications: Cranes, Anchor handling

**How to order: CODE**Wire rope, ungalvanized,  
6 x Fi(29)/WRC DIAM x LENGTH**Ungalvanized**

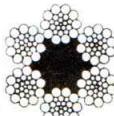
CODE 200 mtr	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 28 51	1-1/4"	10	67.7	6.90	0.440
	52	11.2	84.9	8.66	0.552
	53	12	97.3	9.92	0.634
	54	12.5	106	10.8	0.688
	55	14	133	13.5	0.862
21 28 56	2"	16	173	17.7	1.13
	57	18	219	22.4	1.43
	58	20	271	27.6	1.76
	59	22	327	33.3	2.13
	60	22.4	340	34.6	2.21

(to be continued)

CODE	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
200 mtr					
21 28 61	3"	24	389	39.7	2.53
62		25	423	43.2	2.75
63	3-1/4"	26	457	46.6	2.97
64	3-1/2"	28	531	54.1	3.45
65	3-3/4"	30	609	62.1	3.96
21 28 66		31.5	672	68.5	4.37
67	4"	32	691	70.5	4.51
68		33.5	760	77.5	4.94
69	4-1/4"	34	781	79.6	5.09
70		35.5	853	87.0	5.55
21 28 71	4-1/2"	36	876	89.3	5.70
72		37.5	952	97.1	6.19
73	4-3/4"	38	976	99.5	6.35
74	5"	40	1,080	110.0	7.04

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x WS(26)**

6x[1+5+(5+5)+10]

Applications: Cranes, Winches, Hoists,  
Mooring, Slings

FC

**How to order: CODE**

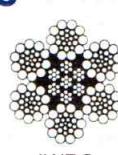
Wire rope, galvanized, 6 x WS(26) DIAM x LENGTH

**Galvanized**

CODE	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
200 mtrs					
21 29 01	1-1/4"	10	54.5	5.55	0.386
02		11.2	68.3	6.97	0.484
03	1-1/2"	12	78.4	8.00	0.555
04		12.5	85.1	8.68	0.603
05	1-3/4"	14	107	10.9	0.756
21 29 06	2"	16	139	14.2	0.988
07	2-1/4"	18	176	18.0	1.25
08	2-1/2"	20	218	22.2	1.54
09	2-3/4"	22	264	26.9	1.87
10		22.4	273	27.9	1.94
21 29 11	3"	24	314	32.0	2.22
12		25	340	34.7	2.41
13	3-1/4"	26	368	37.5	2.61
14	3-1/2"	28	427	43.5	3.02
15	3-3/4"	30	490	50.0	3.47
21 29 16		31.5	540	55.1	3.83
17	4"	32	557	56.8	3.95
18		33.5	611	62.3	4.33
19	4-1/4"	34	630	64.2	4.46
20		35.5	686	70.0	4.86
21 29 21	4-1/2"	36	705	71.9	5.00
22		37.5	766	78.1	5.42
23	4-3/4"	38	786	80.1	5.57
24	5"	40	871	88.9	6.17

(1,620 N/mm<sup>2</sup>)**Wire Rope 6 x WS(26)IWRC**

7x7+6x[1+5+(5+5)+10]

Applications: Running rigging, Winches,  
Cranes, Hoists, Mooring, Towing,  
Anchor handling

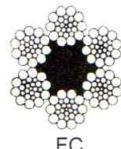
IWRC

**How to order: CODE**Wire rope, galvanized,  
6 x WS(26)/IWRC DIAM x LENGTH**Galvanized**

CODE	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
200 mtrs					
21 29 51	1-1/4"	10	66.2	6.75	0.431
52		11.2	83.0	8.47	0.540
53	1-1/2"	12	96.9	9.88	0.620
54		12.5	103	10.5	0.673
55	1-3/4"	14	130	13.2	0.844
21 29 56	2"	16	169	17.3	1.10
57	2-1/4"	18	214	21.9	1.40
58	2-1/2"	20	265	27.0	1.72
59	2-3/4"	22	326	33.2	2.09
60		22.4	332	33.9	2.16
21 29 61	3"	24	387	39.5	2.48
62		25	414	42.2	2.69
63	3-1/4"	26	455	46.4	2.91
64	3-1/2"	28	519	52.9	3.38
65	3-3/4"	30	596	60.7	3.88
21 29 66		31.5	657	67.0	4.27
67	4"	32	689	70.3	4.41
68		33.5	743	75.7	4.83
69	4-1/4"	34	778	79.3	4.98
70		35.5	834	85.1	5.43
21 29 71	4-1/2"	36	872	88.9	5.58
72		37.5	931	94.9	6.06
73	4-3/4"	38	972	99.1	6.22
74	5"	40	1,060	108.0	6.89

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x WS(31)**

6x[1+6+(6+6)+12]

Applications: Running rigging, Boat falls,  
Winches, Cranes, Safety ropes,  
Hoists, Mooring, Slings**How to order: CODE**

Wire rope, galvanized, 6 x WS(31) DIAM x LENGTH

**Galvanized**

CODE	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
200 mtrs					
21 30 01	1-1/4"	10	55.6	5.67	0.396
02		11.2	69.7	7.11	0.496
03	1-1/2"	12	80.0	8.16	0.570
04		12.5	86.9	8.86	0.618
05	1-3/4"	14	109	11.1	0.776
21 30 06	2"	16	142	14.5	1.01
07	2-1/4"	18	180	18.4	1.28
08	2-1/2"	20	222	22.7	1.58
09	2-3/4"	22	269	27.4	1.92
10		22.4	279	28.4	1.99
21 30 11	3"	24	320	32.6	2.28
12		25	348	35.4	2.47
13	3-1/4"	26	376	38.3	2.68
14	3-1/2"	28	436	44.4	3.10
15	3-3/4"	30	500	51.0	3.56
21 30 16		31.5	552	56.3	3.93
17	4"	32	569	58.0	4.05
18		33.5	624	63.6	4.44
19	4-1/4"	34	643	65.6	4.58
20		35.5	701	71.4	4.99
21 30 21	4-1/2"	36	721	73.5	5.13
22		37.5	782	79.7	5.57
23	4-3/4"	38	802	81.8	5.72
24	5"	40	890	90.7	6.33

(1,620 N/mm<sup>2</sup>)

**Wire Rope 6 x WS(31)IWRC****7x7+6x[1+6+(6+6)+12]**

Applications: Running rigging, Winches, Cranes, Hoists, Mooring, Towing, Anchor handling



IWRC

**How to order: CODE**

Wire rope, galvanized, 6 x WS(31)IWRC DIAM x LENGTH

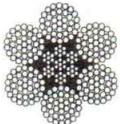
**Galvanized**

Unit Per Mtr.

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 30 51	1-1/4"	10	67.7	6.90	0.441
52		11.2	84.9	8.66	0.553
53	1-1/2"	12	96.2	9.81	0.635
54		12.5	106	10.8	0.689
55	1-3/4"	14	133	13.5	0.864
21 30 56	2"	16	173	17.7	1.13
57	2-1/4"	18	219	22.4	1.43
58	2-1/2"	20	271	27.6	1.76
59	2-3/4"	22	324	33.0	2.13
60		22.4	340	34.6	2.21
21 30 61	3"	24	384	39.4	2.54
62		25	423	43.2	2.76
63	3-1/4"	26	452	46.1	2.98
64	3-1/2"	28	531	54.1	3.46
65	3-3/4"	30	609	62.1	3.97
21 30 66		31.5	672	68.5	4.37
67	4"	32	685	69.8	4.51
68		33.5	760	77.5	4.95
69	4-1/4"	34	773	78.8	5.10
70		35.5	853	87.0	5.56
21 30 71	4-1/2"	36	866	88.3	5.71
72		37.5	952	97.1	6.20
73	4-3/4"	38	965	98.4	6.37
74	5"	40	1,080	110.0	7.05

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x 37 IWRC****7x7+6x[1+6+12+18]**

Applications: Running rigging, Winches, Cranes, Hoists, Mooring, Towing, Anchor handling



IWRC

**How to order: CODE**

Wire rope, galvanized, 6 x 37 IWRC, DIAM x LENGTH

**Galvanized**

Unit Per Mtr.

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 31 26		22.4	325	33.2	2.03
27	3"	24	373	38.1	2.33
28		25	404	41.2	2.52
29	3-1/4"	26	438	44.6	2.73
30	3-1/2"	28	507	51.7	3.17
21 31 31	3-3/4"	30	582	59.4	3.63
32		31.5	642	65.5	4.01
33	4"	32	663	67.6	4.13
34		33.5	726	74.1	4.53
35	4-1/4"	34	748	76.3	4.67
21 31 36		35.5	816	83.2	5.09
37	4-1/2"	36	839	85.6	5.23
38		37.5	910	92.8	5.68
39	4-3/4"	38	935	95.3	5.83
40	5"	40	1,040	106.0	6.46

(to be continued)

21 31 41	5-1/4"	42	1,140	116.2	7.25
42		42.5	1,170	119.0	7.29
43	5-1/2"	44	1,250	128.0	7.82
44		45	1,310	134.0	8.18
45	5-3/4"	46	1,370	140.0	8.54
21 31 46			47.5	1,460	9.11
47	6"	48	1,490	152.0	9.30
48	6-1/4"	50	1,620	165.0	10.10

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x WS(36)****6 x [1+7+(7+7)+14]**

Applications: Running rigging, Boat falls, Winches, Cranes, Safety ropes, Hoists, Mooring, Slings

**How to order: CODE**

Wire rope, galvanized, 6 x WS(36) DIAM x LENGTH

**Galvanized**

Unit Per Mtr.

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 31 01	2-1/2"	20	222	22.7	1.58
02	2-3/4"	22	269	27.4	1.92
03		22.4	279	28.4	1.99
04	3"	24	320	32.6	2.28
05		25	348	35.4	2.47
21 31 06	3-1/4"	26	376	38.3	2.68
07	3-1/2"	28	436	44.4	3.10
08	3-3/4"	30	500	51.0	3.56
09		31.5	552	56.3	3.93
10	4"	32	569	58.0	4.05
21 31 11		33.5	624	63.6	4.44
12	4-1/4"	34	642	65.5	4.58
13		35.5	701	71.4	4.99
14	4-1/2"	36	721	73.5	5.13
15		37.5	782	79.7	5.57
21 31 16	4-3/4"	38	802	81.8	5.72
17	5"	40	890	90.7	6.33
18	5-1/4"	42	981	100.0	6.98
19		42.5	1,000	102.0	7.15
20	5-1/2"	44	1,079	110.0	7.66
21 31 21		45	1,130	115.0	8.01
22	5-3/4"	46	1,177	120.0	8.38
23		47.5	1,250	128.0	8.93
24	6"	48	1,285	131.0	9.12
25	6-1/4"	50	1,390	142.0	9.90

(1,620 N/mm<sup>2</sup>)**Wire Rope 6 x WS(36)IWRC****7x7+6x[1+7+(7+7)+14]**

Applications: Running rigging, Winches, Cranes, Hoists, Mooring, Towing, Anchor handling

**How to order: CODE**

Wire rope, galvanized, 6 x WS(36)IWRC

DIAM x LENGTH

**Galvanized**

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 31 51	2-1/2"	20	271	27.6	1.76
	52	22	330	33.7	2.13
	53	22.4	340	34.6	2.21
	54	24	393	40.1	2.54
	55	25	423	43.2	2.76
21 31 56	3-1/4"	26	461	47.0	2.98
	57	28	531	54.1	3.46
	58	30	609	62.1	3.97
	59	31.5	672	68.5	4.37
	60	32	698	71.2	4.51
21 31 61	33.5	760	77.5	4.95	
	62	34	788	80.4	5.10
	63	35.5	853	87.0	5.56
	64	36	885	90.2	5.71
	65	37.5	952	97.1	6.20
21 31 66	4-3/4"	38	981	100.0	6.37
	67	40	1,080	110.0	7.05
	68	42	1,206	123.0	7.78
	69	42.5	1,220	125.0	7.96
	70	44	1,324	135.0	8.53
21 31 71	45	1,370	140.0	8.93	
	72	46	1,442	147.0	9.33
	73	47.5	1,530	156.0	9.95
	74	48	1,569	160.0	10.2
	75	50	1,690	173.0	11.0

(1,770 N/mm<sup>2</sup>)**Wire Rope 6 x WS(41)**

6 x [1+8+(8+8)+16]

Applications: Running rigging, Winches  
Cranes, Mooring**How to order: CODE**

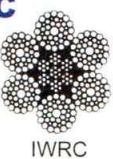
Wire rope, galvanized, 6 x WS(41) DIAM x LENGTH

**Galvanized**

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Unit Per Mtr. (kgs/mtr)
			kN	tf	
21 32 01	3-3/4"	30	500	51.0	3.56
	02	31.5	552	56.3	3.93
	03	32	569	58.0	4.05
	04	33.5	624	63.6	4.44
	05	34	642	65.5	4.58
21 32 06	35.5	701	71.4	4.99	
	07	36	721	73.5	5.13
	08	37.5	782	79.7	5.57
	09	38	802	81.8	5.72
	10	40	890	90.7	6.33
21 32 11	42	981	100.0	6.98	
	12	42.5	1,000	102.0	7.15
	13	5-1/2"	1,079	110.0	7.66
	14	44	1,130	115.0	8.01
	15	45	1,177	120.0	8.38
21 32 16	46				
	47.5	1,250	128.0	8.93	
	48	1,285	131.0	9.12	
17	50	1,390	142.0	9.90	

(1,620 N/mm<sup>2</sup>)**Wire Rope 6 x WS(41)IWRC**

7x7+6x[1+8+(8+8)+16]

Applications : Running rigging, Winches,  
Cranes, Mooring, Towing,  
Anchor handling**How to order: CODE**

Wire rope, galvanized, 6 x WS(41)/WRC DIAM x LENGTH

**Galvanized**

CODE 200 mtrs	Circ. Inch	Diam. mm	Breaking Strength		Unit Per Mtr. (kg/mtr)
			kN	tf	
21 32 51	3-3/4"	30	609	62.1	3.97
	52	31.5	672	68.5	4.37
	53	32	689	70.3	4.51
	54	33.5	760	77.5	4.95
	55	34	779	79.4	5.10
21 32 56	35.5	853	87.0	5.56	
	57	36	873	89.0	5.71
	58	37.5	952	97.1	6.20
	59	38	973	99.2	6.37
	60	40	1,080	110.0	7.05
21 32 61	42	1,187	121.0	7.78	
	62	42.5	1,220	125.0	7.96
	63	44	1,304	133.0	8.53
	64	45	1,370	140.0	8.93
	65	46	1,422	145.0	9.33
21 32 66	47.5	1,530	156.0	9.95	
	67	48	1,549	158.0	10.2
	68	50	1,690	173.0	11.0

(1,770 N/mm<sup>2</sup>)

8 x S(19)

**Elevator Wire Rope**

Standard wire rope to be used for elevators.

**How to order: CODE**Wire rope for elevator, ungalvanized,  
8 x S(19), DIAM x LENGTH**Ungalvanized**

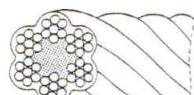
CODE	Diam. mm	Breaking Strength		Unit Per Mtr. (kg/mtr)
		kN	tf	
21 33 01	8.0	26.0	2.65	0.220
	10.0	40.6	4.14	0.343
	11.2	51.0	5.20	0.430
	12.0	58.5	5.96	0.494
	12.5	63.5	6.47	0.536
21 33 06	14.0	79.6	8.12	0.672
	16.0	104.0	10.60	0.878
	18.0	132.0	13.40	1.110
	20.0	162.0	16.60	1.370
	22.4	204.0	20.80	1.720
21 33 11	25.0	254.0	25.90	2.140

**Vinyl Covered Wire Rope**

for Staying Antenna

Cables de Acero con Forro de Vinnilo para Antena

アンテナ用ビニール被覆ワイヤー 涂塑绳



Used for staying antenna pole, boat fall lashing wire, or mast stay wire etc.

Normally 6x19 or 6x24 construction with vinyl cover for protection from corrosion.

**How to order: CODE**

Wire rope, vinyl covered, galvanized, CONSTRUCTION, OUTER DIAM of WIRE ROPE &amp; VINYL COVER, LENGTH

**Galvanized**

Unit Per Mtr.

CODE	Outer Diam. mm		Rope Construction
	Wire Rpe	Vinyl Cover	
21 33 21	6	8	6 x 19
22	8	10	6 x 24
23	10	12	6 x 24
24	12	14	6 x 24
25	14	16	6 x 24
21 33 26	16	18	6 x 24
27	18	21	6 x 24
28	20	23	6 x 24
29	22	25	6 x 24
30	24	27	6 x 24

rope is fitted well to drums and sheaves, there is less resulting friction during actual use, extending the length of service of the rope considerably.

The breaking strength of the non rotating ropes is higher than that of 6 strand ropes of an equivalent diameter and the margin of safety is higher. In spite of the 4 strand construction, these ropes have superior flexibility.

Recommended for use as the hoisting lines of tower and derrick cranes, as grab winch ropes, derrick fall ropes and lifeboat fall ropes.

**UNI-Rope U4 x SeS(39)**

\* Principles of non-rotating properties of wire rope

(1) By making wire rope with multi strands and by laying the strands of the inner core of the rope in the opposite direction of the outer strands, the self rotating torque can be counteracted.

(2) By lengthening the lay (pitch) of the strands, reducing the number of strands, and laying strands of a more triangular shape, the tendency for the rope to be affected by spherical motion is decreased.

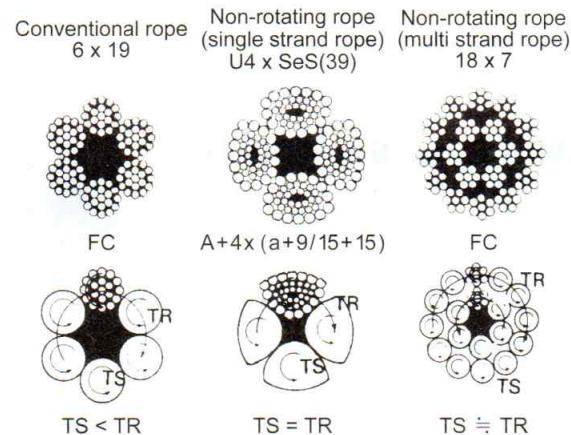
**Typical Example of Rope End Preparation**

Pressed Thimble JIS Type (Mechanical Splice) JIS シンブル付・クランプ加工(B-2802)	
Soft Eye Splice (Mechanical Splice) クランプ加工・シンプルなし	
Soft Eye Splice (Hand-Splice) 普通カゴ差し加工	
Soft Eye Splice (Hand-Splice) "Australian Splice" カゴ差し加工	
Becket Eye (made of 2-strands) 2本ストランダー	
Tapered and Welded End テーパー加工	
JIS Type-Solid Thimble Pressed JIS テッドアイ付・クランプ加工	
Solid Thimble Pressed テッドアイ付・クランプ加工特殊シンブル (ハグランド・タイプ)	
JIS Type-Open Socket JIS O型 ワイヤーソケット加工(F-3432)	
JIS Type-Closed Socket JIS C型 ワイヤーソケット加工(F-3432)	
End with Seizing シージング加工	

**Non Rotating 4 Strand Wire Ropes**

Cable de acero de 4 hilos no giratorio  
非自転ワイヤー 无旋转 4股钢丝绳

Best for use as a single lift crane rope. This rope has a unique four strand construction which serves to control and minimize the self spinning or rotating nature of the rope. The simple construction of the rope prevents sectional collapse and deformation. A smooth exterior finish, created through a special process, withstands abrasion and fits easily to the grooves of a drum or sheave. Because the outer shape of the

**Non Rotating Wire Ropes U4xSeS(39)**

A+4x(a+9/15+15)

**Uni-Rope (Non-Rotating Rope)**

Applications: Cranes, Hoists

**How to order: CODE**

Wire rope, non-rotating, U4 x SeS(39), galvanized, DIAM x LENGTH with TYPE of rope end preparation

**Galvanized**

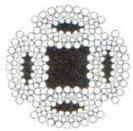
CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 35 01	1"	8	40.9	4.10	0.257
	02	9	51.8	5.28	0.326
	03	1-1/4"	63.9	6.52	0.402
	04	11.2	86.8	8.86	0.505
	05	12	99.7	10.2	0.579
21 35 06	12.5	108	11.0	0.628	
	07	1-3/4"	136	13.8	0.788
	08	16	177	18.1	1.03
	09	18	224	22.9	1.30
	10	19	250	25.5	1.45

(to be continued)

CODE 200 mtrs	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 35 11	2-1/2"	20	277	28.2	1.61
	12	22	335	34.2	1.95
	13	22.4	347	35.4	2.02
	14	24	399	40.7	2.32
	15	25	433	44.1	2.51
21 35 16	3-1/4"	26	468	47.7	2.72
	17	28	543	55.4	3.15
	18	30	623	63.5	3.62
	19	31.5	687	70.1	3.99
	20	32	709	72.3	4.12
21 35 21	33.5	777	79.2	4.51	
	22	34	800	81.6	4.65
	23	35.5	872	89.0	5.07
	24	41-1/2"	897	91.5	5.21
	25	37.5	974	99.3	5.66
21 35 26	4-3/4"	38	1,000	102.0	5.81
	27	5"	1,080	110.0	6.44

Class (Tensile Grade):  
 H..... High Tensile  
 "A"..... Rope Fibre Core      SH..... Special High Tensile  
 "a"..... Strand Fibre Core

## Non Rotating Wire Ropes U4xSeS(48) A+4x(a+12/18+18) Uni-Rope (Non-Rotating Rope)



Uni-Rope F48 type is superior to F39 type in flexibility and fatigue properties. Normally supplied with Right Hand Regular Lay.

Applications: Cranes, Hoists

### How to order: CODE

Wire rope, non-rotating, U4 x SeS(48), galvanized, DIAM x LENGTH with TYPE of rope end preparation

### Galvanized

CODE 200 mtrs	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 35 31	2"	16	189	19.2	1.00
	32	2-1/4"	239	24.4	1.27
	33	19	266	27.1	1.41
	34	2-1/2"	295	30.1	1.56
	35	2-3/4"	357	36.4	1.89
21 35 36	22.4	370	37.7	1.96	
	37	24	425	43.3	2.25
	38	25	450	45.9	2.44
	39	26	487	49.6	2.64
	40	28	564	57.5	3.07
21 35 41	3-3/4"	30	648	66.1	3.52
	42	31.5	714	72.8	3.88
	43	32	737	75.2	4.00
	44	33.5	808	82.4	4.39
	45	34	812	82.8	4.52
21 35 46	35.5	885	90.2	4.93	
	47	36	910	92.8	5.07
	48	37.5	939	95.7	5.50
	49	38	964	98.3	5.65
	50	40	1,070	109	6.26
21 35 51	5-1/4"	42	1,180	120	6.90
	52	42.5	1,210	123	7.06
	53	44	1,290	132	7.57
	54	45	1,350	138	7.92

Class (Tensile Grade):  
 "SH" ..... Special High Tensile  
 "A" ..... Rope Fibre Core  
 "a" ..... Strand Fibre Core

## Non Rotating Wire Ropes 4xF(40)

4 x [8+(8+8)+16]

### Single Rope (Non-Rotating Rope)

Applications: Cranes, Hoists

### How to order: CODE

Wire rope, non-rotating, 4 x F(40), galvanized, DIAM x LENGTH with TYPE of rope end preparation

### Galvanized

CODE 200 mtrs	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 36 25	2-1/2"	20	272	27.8	1.64
	26	22	329	33.6	1.99
	27	22.4	341	34.8	2.06
	28	24	392	40.0	2.36
	29	25	425	43.4	2.57
21 36 30	3-1/4"	26	460	46.9	2.77
	31	28	534	54.4	3.22
	32	30	613	62.5	3.69
	33	31.5	675	68.9	4.07
	34	32	697	71.1	4.20
21 36 35	33.5	764	77.9	4.61	
	36	34	787	80.2	4.74
	37	35.5	858	87.5	5.17
	38	36	882	89.9	5.32
	39	37.5	957	97.6	5.77
21 36 40	4-3/4"	38	983	100.0	5.93
	41	5"	1,090	111.0	6.57

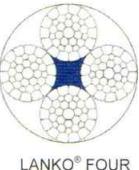


## 4 Strand Non Rotating Wire Ropes LANKO®FOUR

Cable de Acero no Giratorio de 4 Cordones

非自転ワイヤー ランコーフォー

4 股无旋转钢丝绳



LANKO®FOUR is a 4 strand, non-rotating, hoisting wire rope for use on cranes, such as Fukushima and IHI. Galvanized and lubricated to provide long protection against inner abrasion and corrosion. The LANKO®FOUR COMPACTED wire rope has a higher MBF and to maintain the required safety factors. Both versions have a thick outer wire making the wire robust and impact resistant in the often harsh conditions of loading and discharging.

### Specifications

	LANKO® FOUR	LANKO® FOUR COMPACTED
Quality	Galvanized	Galvanized
Tensile Strength	1,960 N/mm <sup>2</sup>	2,060 N/mm <sup>2</sup>
Compacted	No	Yes
Type of Lay	right hand regular lay	right hand regular lay

### LANKO® FOUR

CODE	Dia (mm)	MBF (kN)	Unit Per Mtr.	
			Weight (kg/100m)	
21 36 71	12.5	103	66	
72	18	225	120	
73	20	280	150	
74	22	345	188	
75	24	400	226	

(to be continued)

CODE	Dia (mm)	MBF (kN)	Weight (kg/100m)	Unit Per Mtr.
21 36 77	28	555	304	
78	30	635	349	
79	32	725	397	
80	34	805	429	
81	36	900	497	
21 36 82	38	1,010	556	

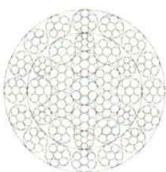
21 35 70	32	773	445
71	34	872	505
72	36	978	573
73	38	1,090	634
74	40	1,210	696

Name of Mfr.: Lankhorst Ropes

**LANKO® FOUR COMPACTED**

CODE	Dia (mm)	MBF (kN)	Weight (kg/100m)	Unit Per Mtr.
21 36 70	30	787	395	
83	32	895	439	
84	34	1,015	499	
85	36	1,133	551	

Name of Mfr.: Lankhorst Ropes

**Multi Strand Non-Rotating Wire Ropes****35 x 7, LANKO®FLEX**Cable de Acero Multifilar no Giratorio  
非自転ワイヤー ランコーフレックス  
多股非旋转钢丝绳

Multi strand, non-rotating, hoisting wire rope. The construction ensures great flexibility to make this wire rope suitable for use on "European" type of cranes. The galvanization and internal/external lubrication provide protection against the environment.

## Applications: Cranes, Hoists

Quality	: Galvanized
Tensile Strength	: 1,960N/mm <sup>2</sup>
Construction	: 35 x 7
Direction of Lay	: Right Hand Lang Lay
Greasing	: Yes
Swivel	: Yes
Optional	: RHRL, LHLL, LHRL

**How to order: CODE**

Multi-strand Wire rope, 35x7, LANKOFLEX, non-rotating, galvanized, DIAM x LENGTH, Type/Direction of Lay, with TYPE of rope end preparation

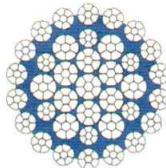
CODE	Dia (mm)	Breaking Strength (kN)	Weight (kg/100 m)	Unit Per Mtr.
21 35 55	8	50.1	27	
56	10	76.2	42	
57	12	104.4	61	
58	13	122	75.6	
59	14	148	85.9	
21 35 60	15	170	98.5	
61	16	193	111	
62	18	244	143	
63	19	272	157	
64	20	302	174	
21 35 65	22	365	213	
66	24	435	254	
67	26	510	299	
68	28	592	343	
69	30	679	394	

**Multi Strand Non-Rotating Wire Ropes****37 x 7, LANKO®PACK**

Cable de acero no rotatorio de múltiples cordones

非自転ワイヤー ランコーパック

防旋转钢丝绳 LANKO



Compacted Multi-Strand, Non-Rotating, Hoisting Wire Rope. The construction ensures great flexibility to make this wire rope suitable for use on "European" type of cranes. The galvanization and internal/external lubrication provide protection against environment.

The compacting gives this wire rope added breaking strength for those circumstances where you need it.

## Applications: Cranes, Hoists

Quality	: Galvanized
Tensile Strength	: 2,160 N/mm <sup>2</sup>
Construction	: 37 x 7
Direction of Lay	: Right Hand Lang Lay
Greasing	: Yes
Swivel	: Yes
Optional	: RHRL, LHLL, LHRL, Plastic Coated Core

**How to order: CODE**

Compacted Multi-strand Wire rope, 37x7, LANKOPACK, non-rotating, galvanized, DIAM x LENGTH, Type/Direction of Lay, with TYPE of rope end preparation

CODE	Dia (mm)	MBF (kN)	Weight (kg/100 m)	Unit Per Mtr.
21 35 76	10	97	48	
77	12	137	68	
78	13	166	82	
79	14	193	95	
21 35 80	15	221	109	
81	16	251	125	
82	18	318	157	
83	19	356	176	
84	20	393	194	
21 35 85	22	475	234	
86	24	567	279	
87	25	617	304	
88	26	661	327	
89	28	771	380	
21 35 90	30	889	439	
91	32	1,008	498	
92	34	1,133	559	
93	36	1,283	631	
94	38	1,418	701	
21 35 95	40	1,569	774	

Name of Mfr.: Lankhorst Ropes

(to be continued)

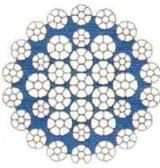
## Multi Strand Non-Rotating Wire Ropes

### 37x7 LANKO®LIFT COMPACTED

Cable de acero no rotatorio de múltiples cordones

非自転ワイヤー ランコーリフト

防旋转钢丝绳 LANKO



Multi strand, non-rotating, hoisting wire rope. During the production process, the core is covered by an especially designed HDPE extruded cover. This special feature gives the wire rope stability, and avoids point-to-point contact between wires of the outer and inner strands, as well as preventing corrosion and wear of the core. When the high breaking strength is taken into account, this hoisting wire rope offers exceptional quality.

Applications: Cranes, Hoists

Quality : Galvanized

Tensile Strength : 1,960 N/mm<sup>2</sup>

Construction : 37 x 7

Direction of Lay : Right Hand Lang Lay

Greasing : Yes

Swivel : Yes

Optional : RHRL, LHLL, LHRL,

#### How to order: CODE

Multi-Strand Wire rope, LANKOLIFT, 37x7, non-rotating, galvanized, DIAM x LENGTH, Type/Direction of Lay, with TYPE of rope end preparation

Unit Per Mtr.			
CODE	Dia (mm)	MBF (kN)	Weight (kg/100 m)
21 36 86	16	239	124.5
87	18	303	156.2
88	19	339	175.7
89	20	374	193.0
90	22	452	234.2
21 36 91	24	540	279.0
92	25	587	304.3
93	26	634	327.0
94	28	734	380.2
95	30	846	439.1
21 36 96	32	960	497.7
97	34	1,079	558.6
98	36	1,222	631.4
99	38	1,352	701.4
21 37 00	40	1,495	774.4
21 37 31	42	1,645	851.9
32	44	1,819	940.0
33	46	1,996	1,037.4
34	48	2,184	1,132.0
35	50	2,332	1,204.2
21 37 36	52	2,549	1,322.6
37	54	2,731	1,412.8

Name of Mfr.: Lankhorst Ropes

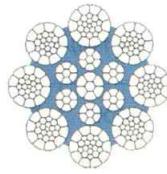
## 8-strand Wire Ropes

### Lanko®Top Compacted

Cable de acero de 8 cordones compactado Lanko® Top

ランコートップ

LANKO ®TOP



An 8 strand compacted luffing wire rope. The core is covered by an especially designed HDPE extruded cover. This special feature gives the wire rope stability, and avoids point-to-point contact between wires of the outer and inner strands, as well as preventing corrosion and wear of the core. Compacting the wire rope provides greater strength, due to higher steel content, and better abrasion resistance, thanks to the larger contact area between wire rope and sheave.

Quality : Galvanized

Tensile strength : 2,160 N/mm<sup>2</sup>

Type of core : Plastic covered IWRC

Direction of Lay : right hand regular lay

Optional : RHLL, LHRL, LHHL

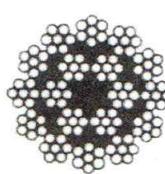
Greasing : Yes

Unit Per Mtr.			
CODE	Dia (mm)	MBF (kN)	Weight (kg/100 m)
21 37 38	12	133	64.9
39	13	156	76.9
40	14	187	90.3
41	15	214	102.6
42	16	242	116.0
21 37 44	18	307	149.4
45	19	342	164.1
46	20	379	183.6
47	22	459	221.5
21 37 48	24	556	263.5
49	26	655	310.6
50	28	748	357.1
51	30	864	411.6
52	32	968	467.2
21 37 53	34	1,091	529.4
54	36	1,217	584.2
55	38	1,332	657.9
56	40	1,479	729.8
57	42	1,613	797.8
21 37 58	44	1,820	900.1
59	46	1,975	978.0
60	48	2,155	1,061.0

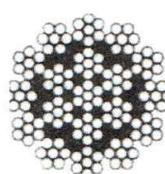
Name of Mfr.: Lankhorst Ropes

## Hercules Ropes

Cable de Acero Tipo "ércules" ヘルクレスロープ 非旋转钢丝绳



18 x 7



19 x 7

Multi strand type non-rotating rope and normally used for lifting or lowering lifeboats or crane wire rope.

#### How to order: CODE

Wire rope, non-rotating, Hercules, CONSTRUCTION, galvanized, DIAM x LENGTH with TYPE of rope end preparation

**18 x 7****A+6x(1+6)/12x(1+6)**

Unit Per Mtr.

CODE	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
		kN	tf	
21 36 51	12.5	85.6	8.73	0.634
52	14.0	107.0	11.0	0.796
53	16.0	140.0	14.3	1.040
54	18.0	178.0	18.1	1.320
55	20.0	219.0	22.4	1.620
<b>21 36 56</b>	<b>22.4</b>	<b>275.0</b>	<b>28.0</b>	<b>2.040</b>

**19 x 7****1x(1+6)+6x(1+6)/12x(1+6)**

Unit Per Mtr.

CODE	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
		kN	tf	
21 36 61	12.5	91.9	9.37	0.664
62	14.0	115.0	11.8	0.833
63	16.0	151.0	15.4	1.090
64	18.0	191.0	19.4	1.380
65	20.0	235.0	24.0	1.700
<b>21 36 66</b>	<b>22.4</b>	<b>295.0</b>	<b>30.1</b>	<b>2.130</b>

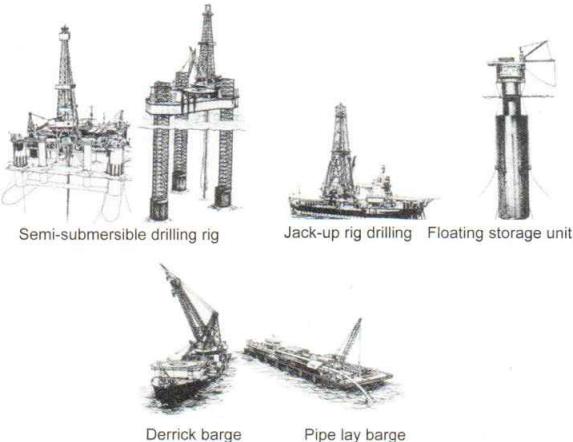
Sand Lines	6 x 7, PPC
Pipe Handling Slings	6 x 24, FC
Heavy Lifting Slings	Cable Laid Steel Wire Rope IWRC

\*\*\* Please indicate Tensile grade (IPS or EIPS) and Finish (Bright or Galvanized) when ordering.

IPS=Improved Plow Steel, EIPS=Extra Improved Plow Steel,

IWRC=Independent Wire Rope Core, FC=Fibre Core

### Typical Exploration Offshore Drilling Units, etc.



### Specification for Wire Rope

ANSI/API Specification 9A

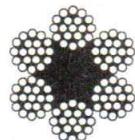
Twenty-fifth Edition, February 2004

ISO 10425:2003, Steel Wire Ropes for the Petroleum and

Natural Gas Industries -

Minimum Requirement and Terms for Acceptance

### Type G.3 - Class 6 x 19M Fibre Core



Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass kg/100 mtr
	Grade 1,770 kN	Grade 1,960 kN	
3	4.89	5.42	3.11
4	8.69	9.63	5.54
5	13.6	15.0	8.65
6	19.6	21.7	12.5
7	26.6	29.5	17.0
8	34.8	38.5	22.1
9	44.0	48.7	28.0
10	54.3	60.2	34.6
11	65.8	72.8	41.9
12	78.2	86.6	49.8
13	91.8	102	58.5
14	107	118	67.8
16	139	154	88.6
18	176	195	112
19	196	217	125
20	217	241	138
22	263	291	167
24	313	347	199
26	367	407	234
28	426	472	271
32	556	616	354

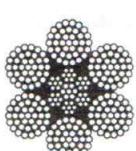
(to be continued)

**Type G.4 - Class 6 × 19M Steel Core**

Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass kg/100 mtr
	Grade 1,770 kN	Grade 1,960 kN	
8	37.6	41.6	24.7
9	47.6	52.7	31.2
10	58.8	65.1	38.6
11	71.1	78.7	46.7
12	84.6	93.7	55.6
13	99.3	110	65.2
14	115	128	75.7
16	150	167	98.8
18	190	211	125
19	212	235	139
20	235	260	154
22	284	315	187
24	338	375	222
26	397	440	261
28	461	510	303
32	602	666	395

**Type G.5 - Class 6 × 37M Fibre Core**

Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass kg/100 mtr
	Grade 1,770 kN	Grade 1,960 kN	
5	13.9	14.6	8.65
6	18.8	20.8	12.5
7	25.6	28.3	17.0
8	33.4	37.0	22.1
9	42.3	46.8	28.0
10	52.2	57.8	34.6
11	63.2	70.0	41.9
12	75.2	83.3	49.8
13	88.2	97.7	58.5
14	102	113	67.8
16	134	148	88.6
18	169	187	112
19	188	209	125
20	209	231	138
22	253	280	167
24	301	333	199
26	353	391	239
28	409	453	271
32	535	592	354
35	640	708	424
36	677	749	448
38	754	835	500
40	835	925	554

**Type G.6 - Class 6 × 37M Steel Core**

Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass kg/100 mtr
	Grade 1,770 kN	Grade 1,960 kN	
8	39.2	43.4	24.4
9	49.6	54.9	30.9
10	61.2	67.8	38.1
11	74.1	82.1	46.1
12	88.2	97.7	54.9
13	95.4	106	64.4
14	111	126	74.7
16	145	160	97.5
18	183	203	123
19	204	226	138
20	226	250	152
22	273	303	184
24	325	360	219
26	382	423	258
28	443	490	299
32	578	640	390
35	692	766	467
36	732	810	494
38	815	903	550
40	903	1,000	610

**Federal Specification, FS RR-W-410E-2002  
(Superseding FS RR-W-410D-1984)**

Type I, General Purpose, Class 1, 6 × 7, Improved Plow Steel, Fiber Cores

Rope Diameter Inches	Circum. Inches	Approx. Weight lbs./ft.	Nominal Strength in lbs.	
			Uncoated	Galvanized
1/4	3/4	0.094	5,280	4,760
5/16	1	0.15	8,200	7,380
3/8	1-1/8	0.21	11,720	10,540
7/16	1-3/8	0.29	15,860	14,280
1/2	1-5/8	0.38	20,600	18,540
9/16	1-3/4	0.48	26,000	23,400
5/8	2	0.59	31,800	28,600
3/4	2-3/8	0.84	45,400	40,800
7/8	2-3/4	1.15	61,400	55,200
1	3-1/8	1.50	79,400	71,400
1-1/8	3-1/2	1.90	99,600	89,600
1-1/4	3-7/8	2.34	122,000	109,800
1-3/8	4-3/8	2.84	146,200	131,600
1-1/2	4-3/4	3.38	172,400	155,200

Type I, General Purpose, Class 1, 6 × 7, Iron Galvanized, Regular Lay, Fiber Cores

Rope Diameter Inches	Circum. Inches	Approx. Weight lbs./ft.	Nominal Strength in lbs.	
			Uncoated	Galvanized
1/4	3/4	0.094	1,840	1,840
5/16	1	0.15	2,840	2,840
3/8	1-1/8	0.21	4,080	4,080
7/16	1-3/8	0.29	5,520	5,520
1/2	1-5/8	0.38	7,160	7,160
9/16	1-3/4	0.48	9,020	9,020
5/8	2	0.59	11,080	11,080
3/4	2-3/8	0.84	15,800	15,800
13/16	2-1/2	0.99	18,460	18,460
7/8	2-3/4	1.15	21,400	21,400
1	3-1/8	1.50	27,600	27,600
1-1/16	3-3/8	1.70	31,000	31,000
1-1/8	3-1/2	1.90	34,600	34,600
1-3/16	3-3/4	2.12	38,400	38,400
1-1/4	3-7/8	2.34	42,400	42,400

Type I, General Purpose, Class 2,  $6 \times 19$ , and Class 3,  $6 \times 37$ , Single Operation Strand, Improved Plow Steel, Fiber Cores

Rope Diameter		Approx. Weight	Nominal Strength in lbs.	
Inches	Circum.	lbs./ft.	Uncoated	Galvanized
1/4	3/4	0.105	5,480	4,940
5/16	1	0.164	8,520	7,660
3/8	1-1/8	0.236	12,200	10,980
7/16	1-3/8	0.32	16,540	14,880
1/2	1-5/8	0.42	21,400	19,260
9/16	1-3/4	0.53	27,000	24,300
5/8	2	0.66	33,400	30,000
3/4	2-3/8	0.95	47,600	42,800
7/8	2-3/4	1.29	64,400	58,000
1	3-1/8	1.68	83,600	75,200
1-1/8	3-1/2	2.13	105,200	94,600
1-1/4	3-7/8	2.63	129,200	116,200
1-3/8	4-3/8	3.18	155,400	139,800
1-1/2	4-3/4	3.78	184,000	165,600
1-5/8	5-1/8	4.44	214,000	192,600
1-3/4	5-1/2	5.15	248,000	224,000
1-7/8	5-7/8	5.91	282,000	254,000
2	6-1/4	6.72	320,000	288,000
2-1/8	6-5/8	7.59	358,000	322,000
2-1/4	7-1/8	8.51	400,000	360,000
2-1/2	7-7/8	10.5	488,000	440,000
2-3/4	8-5/8	12.7	584,000	526,000
3	9-3/8	15.1	685,000	616,000
3-1/4	10-1/4	17.7	798,000	718,000
3-1/2	11	20.6	914,000	822,000

Type I, General Purpose, Class 2,  $6 \times 19$ , and Class 3,  $6 \times 37$ , Single Operation Strand, Improved Plow Steel, Wire Strand Core or IWRC

Rope Diameter		Approx. Weight	Nominal Strength in lbs.	
Inches	Circum.	lbs./ft.	Uncoated	Galvanized
1/4	3/4	0.116	5,880	5,300
5/16	1	0.180	9,160	8,240
3/8	1-1/8	0.26	13,120	11,800
7/16	1-3/8	0.35	17,780	16,000
1/2	1-5/8	0.46	23,000	20,700
9/16	1-3/4	0.59	29,000	26,100
5/8	2	0.72	35,800	32,200
3/4	2-3/8	1.04	51,200	46,000
7/8	2-3/4	1.42	69,200	62,200
1	3-1/8	1.85	89,800	80,800
1-1/8	3-1/2	2.34	113,000	101,800
1-1/4	3-7/8	2.89	138,800	125,000
1-3/8	4-3/8	3.50	167,000	150,400
1-1/2	4-3/4	4.16	197,800	178,000
1-5/8	5-1/8	4.88	230,000	207,000
1-3/4	5-1/2	5.67	266,000	240,000
1-7/8	5-7/8	6.50	304,000	274,000
2	6-1/4	7.39	344,000	310,000
2-1/8	6-5/8	8.35	384,000	346,000
2-1/4	7-1/8	9.36	430,000	387,000
2-1/2	7-7/8	11.6	524,000	472,000
2-3/4	8-5/8	14.0	628,000	566,000
3	9-3/8	16.6	740,000	666,000
3-1/4	10-1/4	19.5	858,000	772,000
3-1/2	11	22.7	982,000	884,000

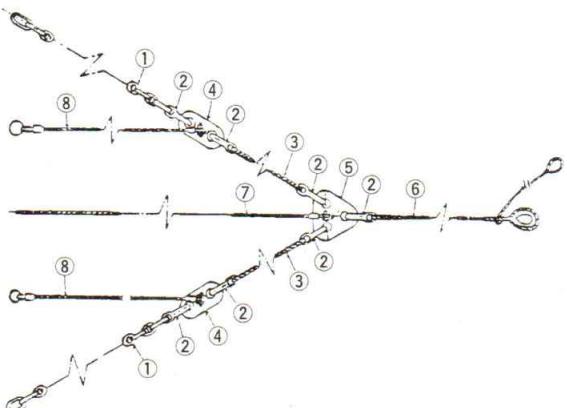
#### Note:

These specifications are quoted from the Federal Specification RR-W-410E dated February 7, 2002 and superseded to RR-W-410D on April 25, 1984. However, please acknowledge that these specifications are subject to change based upon revisions in Federal Regulations and other various factors. To obtain the most updated version of these specifications, please contact the Federal Supply Service Bureau at the following address:

Federal Supply Service Bureau,  
Specification Section  
470 East L'Enfant Plaza S.W., Suite 8100,  
Washington D.C. 20407 U.S.A.  
TEL: (202) 755-0325, FAX: (202) 755-0285

#### Offshore Drilling Units

#### Typical Assembling Plan for Towing Bridle



Quantity listed below shows for 2 sets of Towing Bridles

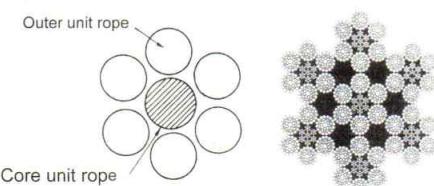
1	Towing Chain 78 mm $\Phi \times 18$ mtr	4 Set
2	Anchor Shackle	14 Pcs.
3	Towing wire 84 mm $\Phi \times 41$ mtr	4 Set
4	Connection Plate	4 Pcs.
5	Tri Plate	2 Pcs.
6	Pendant Wire 80 mm $\Phi \times 50$ mtr	2 Set
7	Recovering Rope 28 mm $\Phi \times 125$ mtr	2 Set
8	Recovering Rope	4 Set

#### Cable Laid Slings

Cables de Acero Ligado ケーブルレイドスリング 强力钢丝绳吊索

Steel slings which are designed for use in situations where extremely heavy load capacity is required. In the structural design and construction of modern offshore drilling rigs it is necessary to use ropes which can withstand very heavy loads for extended periods of time under extreme conditions.

For such jobs, ropes of more complex construction designs with high breaking strengths, good flexibility, easy handling, and product reliability are in greater demand.



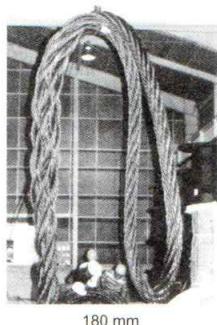
#### Cable Laid Design

The term "Cable Laid" indicates a rope that is constructed from a number of unit ropes laid up in a helical design. Because of the complexity of the rope design, there is a wide choice of sling constructions available. A more typical design is illustrated in this section.

When ordering, please indicate the size of the eye splice at each end of the rope as well as the diameter of the sling, the construction, breaking strength, and total length.

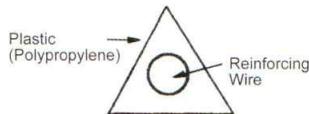
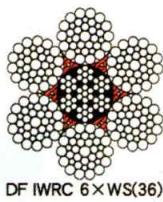
#### How to order: 21 - 38 - 01

Sling, cable laid, galvanized, DIAM of SLING, CONSTRUCTION, BREAKING STRENGTH, LENGTH



## Delta Filler Wire Ropes

Cable de Acero Tipo "Delta" デルタフィラーロープ 三角形填充钢丝绳



DF IWRC 6×WS(36)

A specially designed IWRC type rope with a patented plastic filler liner between the inner core and the outer strands of the rope. There are several unique advantages to this wire construction which make it more efficient and durable than normal wire ropes.

Delta Filler Rope eliminates one of the leading cause for unexpected wire rope failure, the invisible breakage of wire contact points inside of the wire core. When a rope is in use, the inner core of the rope is constantly in friction with the outside strands, causing abrasive wear on the connecting points in the wire core. With the Delta Filler Rope, a plastic lining fills the inner space of the rope stabilizing the strand lay construction and absorbing any friction between the inner core and the outer strands of the rope. The inner plastic lining also protects the inner core from corrosion. It keeps water and other elements from entering the inner core of the rope while keeping the anticorrosive lubricant oils inside of the rope from dripping out and polluting the environment.

Because of the ropes tendency not to twist it has a higher breaking strength than conventional ropes.

Delta Filler Rope is suitable for the following uses:

- \* As a mooring line for LNG carriers
- \* As a ramp support for RO-RO vessels.
- \* As an anchoring line for large vessels.
- \* As a luffing for deck cranes.
- \* As a guy line for large cranes.
- \* As a towing line for ocean tugboats.

#### How to order: 21 - 38 - 06

Delta Filler Wire Rope, CONSTRUCTION, DIAM, LENGTH with TYPE of rope end preparation

Circ. Inch	Diam. mm	Outer wire dia mm		Breaking Strength		Weight per mtr (kg/mtr)
		6 × 36 W.S.	6 × 41 W.S.	kN	tf	
3-1/4"	25	1.42	1.26	431	44.0	2.75
	26	1.47	1.30	467	47.6	2.97
3-1/2"	28	1.62	1.42	541	55.2	3.45
3-3/4"	30	1.72	1.52	621	63.3	3.96
	31.5	1.82	1.62	685	69.8	4.36

(to be continued)

4"	32	1.85	1.65	707	72.1	4.50
	33.5	1.92	1.72	775	79.0	4.94
4-1/4"	34	1.95	1.75	798	81.4	5.08
	35.5	2.02	1.82	870	88.7	5.54
4-1/2"	36	2.06	1.85	894	91.2	5.70
	37.5	2.15	1.92	971	99.0	6.18
4-3/4"	38	2.18	1.95	1,000	102	6.35
5"	40	2.27	2.02	1,108	113	7.04
5-1/4"	42	2.36	2.12	1,216	124	7.76
	42.5	2.40	2.15	1,245	127	7.94
5-1/2"	44	2.47	2.20	1,334	136	8.51
	45	2.55	2.27	1,402	143	8.91
5-3/4"	46	2.60	2.33	1,461	149	9.31
	47.5	2.70	2.40	1,559	159	9.92
6"	48	2.72	2.43	1,589	162	10.1
6-1/4"	50	2.85	2.55	1,726	176	11.0
6-1/2"	52	2.95	2.60	1,863	190	11.9
	53	3.03	2.70	1,942	198	12.4
6-3/4"	54	3.10	2.75	2,010	205	12.8
7"	56	3.20	2.85	2,167	221	13.8
7-1/4"	58	3.30	2.95	2,324	237	14.8
7-1/2"	60	3.40	3.03	2,491	254	15.8
	63	3.60	3.20	2,746	280	17.5

## Green Ropes

Cable de Acero Tipo "Green"

グリーンロープ 格林钢丝绳

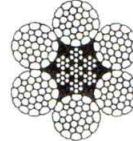
A unique full circle processed form provides approx. 10 to 20% higher breaking strength and endurance against abrasion compared with conventional wire rope.

Also this form will not get out easily under hard conditions by passing through the rollers or sheaves, or by winding into rope drum frequently.

Applications: Winches, Cranes

#### How to order: 21 - 38 - 11

Wire rope, Green Rope, ungalvanized 6xWS(31)/IWRC, DIAM x LENGTH with TYPE of rope end preparation



### Ungalvanized

Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kg/mtr)
		kN	tf	
2-1/4"	18	265	27.1	1.50
2-1/2"	20	328	33.4	1.86
2-3/4"	22	396	40.4	2.25
3"	24	472	48.1	2.67
	25	512	52.2	2.90
3-1/4"	26	554	56.4	3.14
3-1/2"	28	642	65.5	3.64
3-3/4"	30	737	75.2	4.18
4"	32	839	85.5	4.75
4-1/4"	34	947	96.5	5.37
4-1/2"	36	1,060	108.0	6.02

## Stainless Steel Wire Ropes

Cable de Acero Inoxidable ステンレスワイヤロープ 不锈钢钢丝绳

There are many kinds of stainless steel ropes which are applicable for use in a wide variety of industries. The most commonly used stainless steel alloys are the AISI 304 and AISI 316 alloys which have superior resistance to corrosion in atmospheres with the presence of alkaline, acidic, or chemical elements. Stainless steel is also superior in its resistance to the adverse effects of extreme hot or cold temperatures.

### Features of Stainless Steel Rope

- \* It will not rust easily in normal atmospheres and keeps a clean surface appearance.
- \* It will resist corrosion easily in high temperatures.
- \* It will resist corrosion from many industrial chemicals.
- \* Hard stainless steel has a high breaking strength and superior mechanical properties.
- \* Soft stainless steel wire rope is laid with bright annealing wire and is very flexible.
- \* Stainless steel AISI 304 complies with Japanese Industrial Standards SUS-304 for wire ropes.

### Stainless Steel Wire Rope 1 x 19

**1 x (1 + 6 + 12)**

Applications: Standing Riggings

#### How to order: CODE

Wire rope, stainless steel, SUS-304, 1 x 19,

DIAM x LENGTH



Unit Per Mtr.

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 40 01		7	44.3	4.52	0.265
02	1"	8	53.0	5.40	0.328
03	1-1/8"	9	68.1	6.94	0.416
04	1-1/4"	10	81.4	8.30	0.512
05		11	100	10.2	0.640
21 40 06	1-1/2"	12	109	11.1	0.710
07	1-3/4"	14	151	15.4	1.00
08	2"	16	180	18.4	1.31
09	2-1/4"	18	230	23.5	1.66
10		19	255	26.0	1.85

### Stainless Steel Wire Rope 6 x 19

**6 x (1 + 6 + 12)**

Applications: Cranes, etc.

#### How to order: CODE

Wire rope, stainless steel, SUS-304, 6 x 19,

DIAM x LENGTH



Unit Per Mtr.

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 40 31	3/4"	6	22.2	2.26	0.133
32	1"	8	37.9	3.86	0.236
33	1-1/8"	9	48.6	4.96	0.298
34	1-1/4"	10	58.5	5.97	0.369
35	1-1/2"	12	84.2	8.59	0.531
21 40 36	1-3/4"	14	112	11.4	0.724
37	2"	16	143	14.6	0.924
38	2-1/4"	18	183	18.7	1.20
39	2-1/2"	20	221	22.5	1.47
40	2-3/4"	22	267	27.2	1.86
21 40 41	3"	24	316	32.2	2.05
42	3-1/4"	26	359	36.6	2.50

### Stainless Steel Wire Rope 7 x 19

**1 x (1+6+12) + 6 x (1+6+12)**

Applications: Hoists, etc.

#### How to order: CODE

Wire rope, stainless steel, SUS-304, 7 x 19,

DIAM x LENGTH



CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 40 74	1/8"	1	0.784	0.08	0.004
75	1/4"	2	2.75	0.28	0.017
76	3/8"	3	6.13	0.62	0.038
61	1"	8	40.0	4.08	0.269
62	1-1/8"	9	53.4	5.45	0.340
21 40 63	1-1/4"	10	64.5	6.58	0.419
64	1-1/2"	12	93.0	9.48	0.584
65	1-3/4"	14	124	12.6	0.821
66	2"	16	158	16.1	1.08
67	2-1/4"	18	203	20.7	1.36
21 40 68	2-1/2"	20	244	24.9	1.68
69	2-3/4"	22	295	30.1	2.12
70	3"	24	350	35.7	2.41
71	3-1/4"	26	398	40.6	2.94
72	3-1/2"	28	479	48.8	3.28
21 40 73	3-3/4"	30	534	54.5	3.77

### Stainless Steel Wire Rope 6 x 24

**6 x (9 + 15)**

Applications: Cranes, etc.

#### How to order: CODE

Wire rope, stainless steel, SUS-304, 6 x 24,

DIAM x LENGTH



Unit Per Mtr.

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 41 01	3/4"	6	19.0	1.94	0.103
02	1"	8	33.4	3.41	0.215
03	1-1/8"	9	52.0	4.28	0.273
04	1-1/4"	10	51.9	5.29	0.337
05	1-1/2"	12	72.9	7.43	0.487
21 41 06	1-3/4"	14	99.0	10.1	0.661
07	2"	16	127	13.0	0.864
08	2-1/4"	18	159	16.2	1.10
09	2-1/2"	20	196	20.0	1.35
10	2-3/4"	22	230	23.5	1.70
21 41 11	3"	24	275	28.0	1.88
12	3-1/4"	26	301	30.7	2.29

### Stainless Steel Wire Rope 6 x 37

**6 x (1 + 6 + 12 + 18)**

Applications: Cranes, etc.

#### How to order: CODE

Wire rope, stainless steel, SUS-304, 6 x 37,

DIAM x LENGTH



Unit Per Mtr.

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)
			kN	tf	
21 41 31	3/4"	6	21.0	2.14	0.131
32	1"	8	35.2	3.59	0.232
33	1-1/8"	9	45.1	4.60	0.294
34	1-1/4"	10	54.4	5.55	0.364
35	1-1/2"	12	78.4	7.99	0.505
21 41 36	1-3/4"	14	104	10.6	0.713
37	2"	16	134	13.7	0.933
38	2-1/4"	18	173	17.6	1.19
39	2-1/2"	20	207	21.1	1.45
40	2-3/4"	22	250	25.5	1.84

(to be continued)

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per Mtr.
			kN	tf		
200 mtrs						
<b>21 41 41</b>	3"	24	297	30.3	2.03	
42	3-1/4"	26	333	34.0	2.55	
43	3-1/2"	28	394	40.2	2.86	
44	3-3/4"	30	430	43.8	3.28	

### Stainless Steel Wire Rope 7 x 37 1 x (1+6+12+18) + 6 x (1+6+12+18)

Applications: Cranes, etc.



#### How to order: CODE

Wire rope, stainless steel, SUS-304, 7 x 37,  
DIAM x LENGTH

CODE	Circ. Inch	Diam mm	Breaking Strength		Weight per mtr (kg/mtr)	Unit Per Mtr.
			kN	tf		
200 mtrs						
<b>21 41 61</b>	3/4"	6	23.2	2.37	0.151	
62	1"	8	38.8	3.96	0.267	
63	1-1/8"	9	51.5	5.25	0.338	
64	1-1/4"	10	62.1	6.33	0.417	
65	1-1/2"	12	89.3	9.11	0.580	
<b>21 41 66</b>	1-3/4"	14	119	12.1	0.818	
67	2"	16	154	15.7	1.07	
68	2-1/4"	18	197	20.1	1.35	
69	2-1/2"	20	237	24.2	1.67	
70	2-3/4"	22	286	29.2	2.10	
<b>21 41 71</b>	3"	24	341	34.8	2.32	
72	3-1/4"	26	390	39.8	2.94	
73	3-1/2"	28	439	44.8	3.28	
74	3-3/4"	30	500	51.0	3.77	

## Wire Rope Slings

Eslinges de Acero ワイヤースリング 钢丝绳吊索

Generally made from galvanized wire rope of 6 x 24 construction. Made to order. When ordering, please specify the following points:

1. Type
2. Wire Rope Construction
3. Wire Rope Diameter
4. Overall Length



Loop-Loop



Thimble-Loop

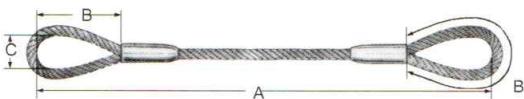


Thimble-Thimble

#### How to order: 21 - 45 - 01

Sling, wire rope, TYPE, CONSTRUCTION , DIAM (mm),  
OVERALL LENGTH (mtr)

#### Standard Size of Eye Splicing



Wire Rope Diam.	Standard Size of Eye Splice			Wire Rope Diam.	Standard Size of Eye Splice		
	B	C	B'		B	C	B'
6	100	50	250	36	500	250	1,250
8	160	80	400	38	500	250	1,250
9	160	80	400	40	600	300	1,500
10	200	100	500	42	600	300	1,500
12	200	100	500	45	700	350	1,750
14	260	130	650	48	800	400	2,000
16	260	130	650	50	900	450	2,250
18	300	150	750	53	1,000	500	2,500
20	300	150	750	56	1,100	550	2,750
22	300	150	750	60	1,200	600	3,000
24	360	180	900	65	1,300	650	3,250
26	360	180	900	70	1,400	700	3,500
28	400	200	1,000				
30	400	200	1,000				
32	460	230	1,150				
34	460	230	1,150				

## Cable Grips (Cable Stocking)

Asideros de Cables ケーブルグリップ 钢丝绳套环

Cable grips are invariably made from woven mesh wire in the shape of an open ended stocking or sleeve. Cable grips of the same diameter as the rope to be restored are prepared with the strand ends fitted with pull collars. The sock is placed over the ends of the new and old wire ropes and when it is pulled taught, the woven mesh tightens snug around the rope.

The grip is easily fitted and removed. It holds the wire rope securely, operates safely, and saves labor costs compared to other means of rope repair.

CODE	Rope Diam mm	Size mm			Max. Work Load (Tons)
		a	b	L	
<b>Standard Type (R)</b>					
<b>21 45 06</b>	8 ~ 11	450	140	590	0.5
07	11 ~ 13	500	190	690	1.1
08	13 ~ 16	600	190	790	1.1
09	16 ~ 21	650	220	870	1.4
10	21 ~ 25	850	220	1,070	1.7
<b>21 45 11</b>	25 ~ 30	900	250	1,150	2.7
12	30 ~ 35	1,100	310	1,410	3.0
13	35 ~ 42	1,200	360	1,560	3.5
14	42 ~ 50	1,500	360	1,860	4.2

**Joint A Type (RA)**

<b>21 45 15</b>	8 ~ 11	450	140	1,040	0.4
<b>16</b>	11 ~ 13	500	210	1,210	0.8
<b>17</b>	13 ~ 16	600	210	1,410	0.8
<b>18</b>	16 ~ 21	650	220	1,520	1.1
<b>19</b>	21 ~ 25	850	220	1,920	1.3
<b>21 45 20</b>	25 ~ 30	900	220	2,020	2.1
<b>21</b>	30 ~ 35	1,100	280	2,480	2.4
<b>22</b>	35 ~ 42	1,200	280	2,680	2.8
<b>23</b>	42 ~ 50	1,500	280	3,280	3.3

**Joint B Type (RB)**

CODE	Road Diam mm	Size (L) mm	Max. Work Load (Tons)
<b>21 45 24</b>	8 ~ 11	950	0.4
<b>25</b>	11 ~ 13	1,200	0.8
<b>26</b>	13 ~ 16	1,600	0.8
<b>27</b>	16 ~ 21	1,700	1.1
<b>28</b>	21 ~ 25	2,000	1.3
<b>21 45 29</b>	25 ~ 30	2,000	2.1
<b>30</b>	30 ~ 35	2,600	2.4
<b>31</b>	35 ~ 42	2,900	2.8
<b>32</b>	42 ~ 50	3,500	3.3

**Stoppers (Shoes)****How to order: 21 - 46 - 11**

Guy preventer, galvanized wire rope, 20 mm dia, 7 × 19 × length  
× sleeve interval × processing of rope and × with stopper (set)

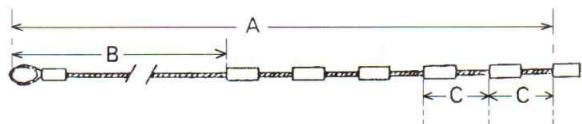
**Guy Preventers & Stoppers**

Patarréz y Estopores

ガイブリベンター &amp; ストッパー 钢丝绳制动器

When ordering the preventers, please specify:

- (1) Overall length of wire rope: (A)
- (2) Intervals and the number of sleeves (Ferrules) to be attached: (B & C)
- (3) Rope-end processing
- (4) Quantity

**Galvanized Steel Wire Rope**

Construction : 7 × 19

Diam : 20 mm

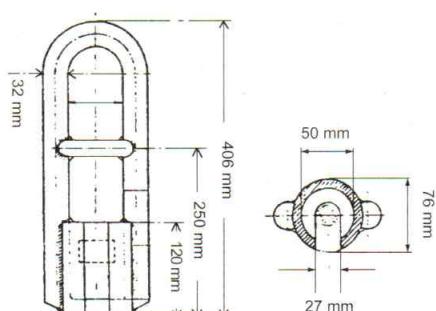
Breaking Strength : 32 tons

**Sleeves (Ferrules)**

Material	: Aluminium Alloy
Size	: Diam - 43 mm Length - 100 mm

**Stoppers (Shoes) or Preventer Grips**

Material	: Iron
Size	: as per sketch

**Rope Core**

FC Fibre Core

IWRC Independent Wire Rope Core

**Rope Symbols**

S	Seale
W	Warrington
Fi	Filler
WS	Warrington Seale
SeS	Semi Seale
IWRC	Independent Wire Rope Core
FC	Fibre Core

**Wire Rope Section**

Warrington Type



Filler Type



Semi Seale Type



Warrington Seale Type