

Lankhorst | *Ropes*

**THROUGH LIFE,
FOR LIFE**



MA

MARITIME

DRY CARGO.



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LANKHORST ROPES... THE VITAL CONNECTION

Lankhorst Ropes is a world leading supplier of synthetic fibre and steel wire ropes for the maritime and offshore industries. As a Royal Lankhorst Euronete Group company, Lankhorst Ropes is also part of the world's largest steel wire manufacturer, WireCo WorldGroup.

Founded in 1803, Lankhorst Ropes has over 200 years' experience in the manufacture and supply of high performance ropes for mooring and towing applications.

Our core business is the development and production of high performance, synthetic and steel wire ropes for mooring and anchor systems, as well as towing and crane hoisting and luffing applications. We are committed to setting the standard for maritime ropes through our leading rope brands - TIPTO® 'Strong & Durable' family, EURO 'Strong & Stretch' family and LANKO® 'Strong & Light' family, which provide an optimal combination of breaking strength, life-time safety and ease of handling. All our ropes are produced in accordance with OCIMF recommendations and ISO standards.

As a supplier of steel wire ropes, Lankhorst Ropes has direct access to WireCo's large steel wire manufacturing resource and leading wire rope brands, like Casar ropes. Our design team has many years' experience in applications using both synthetic and steel ropes. Lankhorst offers a one-stop shop for synthetic and steel wire ropes to shipping and offshore companies globally; and we are the key player for new build ships.

RELIABILITY AND SAFETY

Lankhorst Ropes is fully certified according to ISO 9001:2008. Quality is central to our business ethos, ensuring you benefit from the highest quality products and services. Our factories for both steel wire and fibre ropes are approved by many IACS members, such as Lloyds, DNV/GL, BV and ABS. In addition, Lankhorst Ropes incorporates features like higher visibility, traceability, snap back protection and lower weight in their ropes, making them easier and safer to use.

INNOVATION AND HIGH PERFORMANCE

Lankhorst Ropes has a reputation for excellence in product innovation. Multi-award winning rope innovations, for example, the TIPTO® WINCHLINE anti-snap back feature received the 'Innovation in Ship Operations' award from SEATRADE in 2013, have led the industry in rope handling and safety. Lankhorst Ropes is leader in providing extraordinary solutions in terms of breaking strength, service life and ease of rope handling.

SERVICE AND DELIVERY

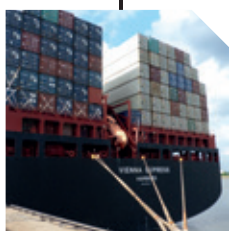
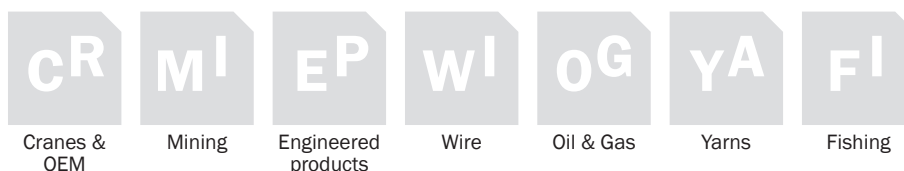
Lankhorst Ropes maintains stock points at strategic locations and main ports worldwide. Thanks to our widespread network and global presence, you are ensured continuity of supply, fast service and short delivery times. Our global network of stock points and local sales offices includes Algeciras, Bilbao, Brisbane, Cape Town, Dordrecht (NL), Dubai, Durban, Fujairah, Houston, Panama, Perth, Retford (UK), Rio de Janeiro, Rotterdam, Singapore and Sneek (NL).

**PARTNER AND PROBLEM SOLVER**

Lankhorst Ropes develops, manufactures and supplies a broad range of ropes directly from stock. Besides fast supply of standard items and rope configurations, Lankhorst Ropes has a dedicated confectioning centre to meet the needs of different market segment demands for specialized and tailor made solutions. In close consultation with our clients, we can bring nearly any desired product to market.

SUSTAINABLE AND ENVIRONMENTALLY FRIENDLY

Lankhorst Ropes is committed to sustainability in its products and operations, conserving energy and natural resources wherever possible. We introduced the maritime rope industry's first recycling scheme for retired ropes, for use in moulded public furniture, poles and planks, for example. It is an integral part of our sustainability policy and helps many of our partners enhance their environmental policies.

**MARITIME****DRY CARGO****WET CARGO****TUG & TOWING****CRUISE****DREDGING****INLAND SHIPPING**

LANKHORST ROPES FOR DRY CARGO

**OUTSTANDING
SERVICE LIFE
PERFORMANCE
AND, AS A
RESULT, LOW
TOTAL COST OF
OWNERSHIP.**

Dry cargo shipping companies are facing unprecedented levels of competitiveness. With commodity markets for coal, grain, steel products, ore and other loose form products under increasing cost pressure, dry cargo carriers must operate as efficiently as possible. Optimising mooring operations is an important factor in achieving efficient loading and unloading – reducing unnecessary and costly delays and additional port charges.

Lankhorst Ropes offers a one-stop shop for a broad range of fibre and steel wire ropes for hoisting, luffing and mooring for dry cargo vessels from small vessels (20,000 DWT) through new Panamax (120,000 DWT) and up to Chinamax (400,000 DWT). They offer outstanding service life performance and, as a result, low total cost of ownership.

Ease of handling, speed of mooring and rope safety are the trademark of Lankhorst Ropes. Manufactured in the EU using the latest in-house yarn extrusion and rope production techniques, the rope construction is optimised to suit the application and prevailing mooring conditions. All Lankhorst ropes are manufactured from premium materials with full rope traceability. Moreover, as a leading rope manufacturer we work closely with our suppliers such as DSM Dyneema, to ensure the highest quality standards from raw materials, through manufacture, delivery and installation of the finished rope.

Consistent rope performance is vital during mooring and towing. Using Lankhorst ropes, vessel operators are assured that their ropes are made with the greatest materials consistency to provide the same elongation, and service life, enabling more efficient rope management and supply through Lankhorst Ropes' extensive global stock point network. In this way, the risk of mixed mooring is eliminated.

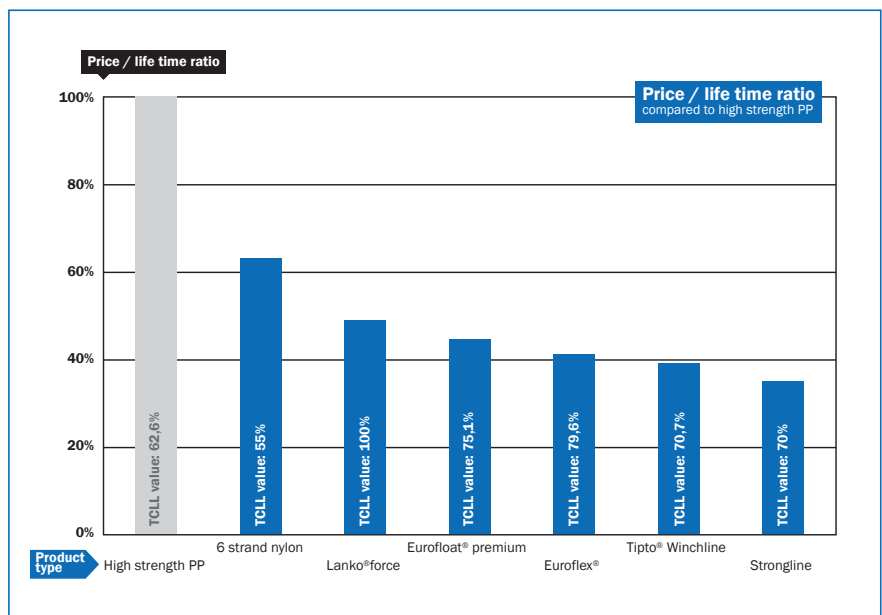
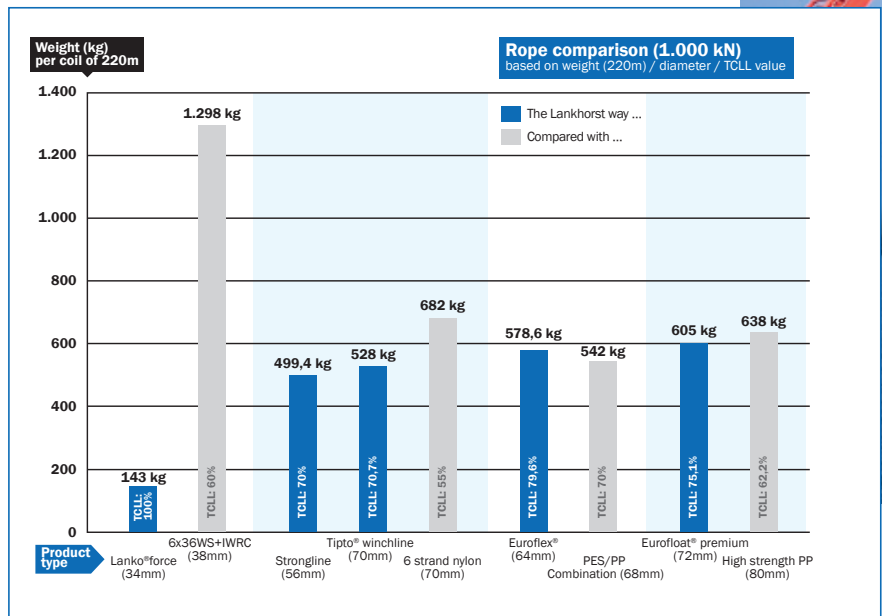
Lankhorst has a dedicated fibre rope R&D centre providing the technical know-how needed to produce award-winning rope innovations in rope handling and safety. In-built anti-snap back designs reduce the risks to crew, as does the A3 splice that makes rope handling easier and safer during mooring and towing.

For Dry Cargo vessel owners and operators, Lankhorst Ropes offers a special rope design for 'dusty' environments, a common problem for dry cargo vessel ropes. It significantly reduces the potential problem of internal abrasion.

Lankhorst Ropes 'Your' partner for new build and replacement ropes. The breadth and depth of our range of fibre and steel wire ropes, backed by a global network of stock points, means we are able to provide complete fleet supply ensuring your dry cargo shipping operations remain efficient and cost-effective.

OUR ROPE SYSTEM

± 1.000 kN coil of 220m	Lanko®force	Strongline	Tipto® winchline	Euroflex®	Eurofloat® premium
Density	0,98	1,38	0,93	1,14	0,98
Melting point (°C)	147 °C	265 °C	140 °C	165-265 °C	165-260 °C
Dry / wet (%)	100%	100%	100%	100%	100%
Used Rope elongation (%)	2,2%	7,5%	8,5%	12,5%	15%
UV resistance	excellent	excellent	very good	good	good
TCLL value (%)	100%	70%	70,7%	79,6%	75,1%



'THROUGH LIFE, FOR LIFE' SERVICE MODEL



The cost and operational demands on dry cargo operators have never been greater. Maintaining a competitive edge is often the sum of marginal gains, small improvements, which when taken together can make a big difference. Lankhorst Ropes' Through Life, For Life service is designed to do just this.

Lankhorst Ropes: Through Life, For Life gives operators a portfolio of rope service life support and sustainability benefits unmatched in the industry.

From development of a mooring plan to rope selection and management through predictive service-life rope testing and training, Lankhorst provides complete 'through life' rope service – we want you to experience the benefit of working with our ropes in terms of longer rope service-life, easier handling and safe operation.

And then we go further. Commitment to Green manufacture combined with a longer lasting rope service-life, and ultimately rope recycling, translates into levels of sustainability that make a significant contribution to your environmental policies. Looked at in this way, life enhancing, sustainability is built-in with Lankhorst Ropes: Through Life, For Life; and it makes good business sense too!

ROPE SELECTION

Making the correct rope selection is vital. The cost-effectiveness and safety of shipping operations are dependent on selecting the correct rope. Lankhorst takes a holistic approach to prevent early failure of the rope:

- Analysis of ship route and mooring conditions
We will jointly go through all details of the trading route (if known) including type of mooring, expected swell conditions, possible currents and risks of surging.
- Analysis of the mooring plan
We will jointly go through all details of the rope route starting from the winch, and calculated winch capacity, to analysis of D/d ratios.



RESIDUAL STRENGTH TESTING

Lankhorst Ropes will provide a continuous residual strength testing program in order to assist in determining the best moment to change the rope end-to-end in order to ensure the best economical life time and to optimise safety on board. We believe this should be based on mooring hours, i.e. the number of hours a line has been used in mooring the vessel. This can be quantified by vessel and reported back to the manufacturer. Other factors which ought to be taken into consideration are local environmental conditions at the ports and terminals.

VISUAL INSPECTION

The rope-sample is visually inspected. Photos are taken for the final residual strength test report before pulling the sample to destruction.

TEST REPORT

Each sample will get its own test certificate as illustrated.

ROPE SELECTION CRITERIA

Base on the holistic analyses, Lankhorst will recommend a rope to meet the desired properties based on:

- Elongation properties
- Rope flexibility/stiffness
- Break load
- Chafing gear
- Safety risks
- Floatability
- Service Life expectations
- Environmental conditions
- International standards

INSTALLATION OF ROPE AND CREW TRAINING

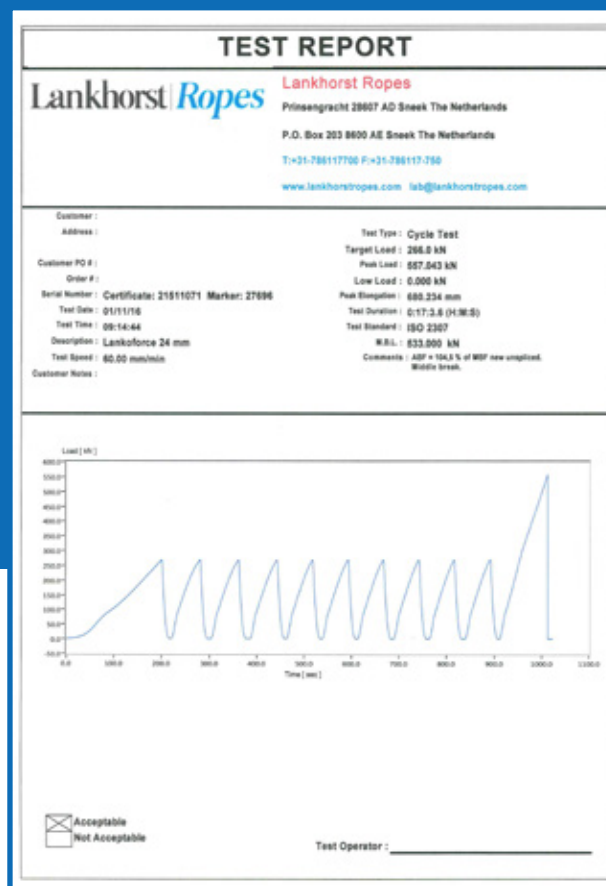
Lankhorst Ropes is committed to equipping crew with the knowledge and skills needed to ensure safe use of fibre ropes and maximum service life. Specifically, we provide:

- Training on rope handling
- Splicing instructions
- Installation on new (@shipyard) or existing (@ports) vessels
- Hardware inspection including all on-vessel equipment

INSPECTION/MAINTENANCE/TRAINING

Regular inspection is important in ensuring maximum rope service life. In addition to the crew training on rope handling and inspection, Lankhorst Ropes will make periodic visits to the vessel in port to undertake:

- Hardware inspection
- Full length rope inspection
- Update crew training
- Produce an Inspection report

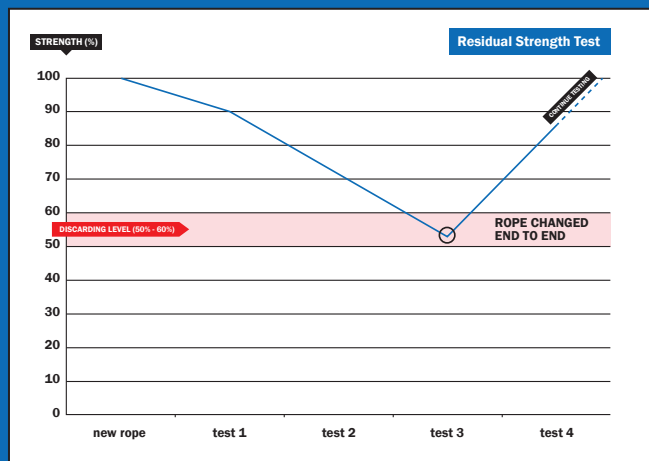


DEVELOPING SAFE RETIREMENT CRITERIA

By a continuous process of analysis and testing, it is possible to determine the most economical and safest points for ending rope usage and ultimately rope retirement.

THROUGH LIFE, FOR LIFE

Longer rope service-life,
easier handling, safe
operation, green
manufacture and rope
recycling.



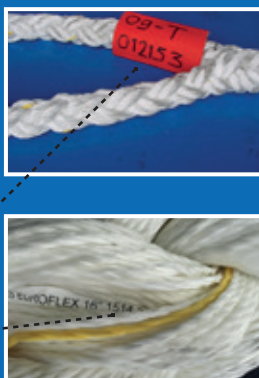
RECYCLING OF ROPES

The two testing and recycling programmes can be combined. Ropes which are returned for testing and deemed unusable, can be used for recycling into other polymer products. On the image you see an offshore vessel with KLP® Deck Covers made by Lankhorst Engineered Products.

Proof of participation in the recycling programme is shown by a logo on the Work Certificate.

The recycling programme is an exclusive programme. It is not meant for ad hoc single rope returning for recycling as an alternative to disposal by our customers. The intention is that the whole fleet's ropes will be recycled in time.

Check the rope selection pages to find out which products participate in the recycling programme.



ROPE TRACEABILITY

Record keeping is essential for the safe use of mooring and towing ropes. Lankhorst high performance ropes carry a unique Product Identification Code (PIC). This PIC code is printed on a tape inside the rope and on the protective barrier in the eye. It corresponds with the factory certificate number for each rope, providing an effective way of managing rope use and maintenance.



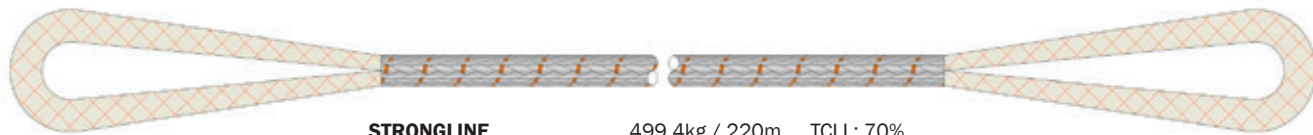
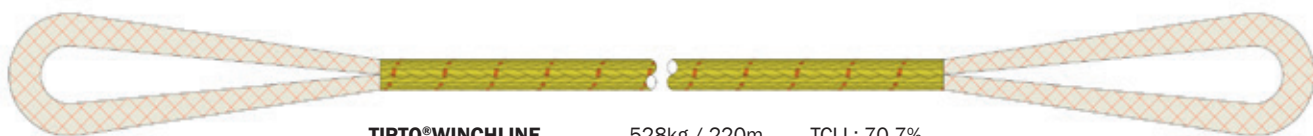
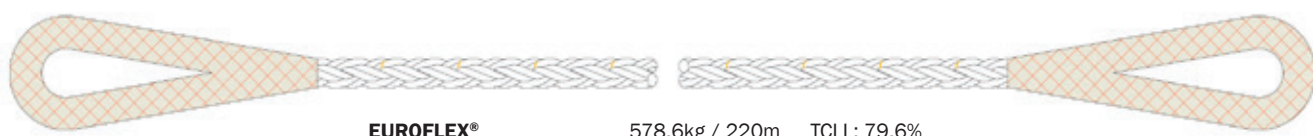


24/7 ACCESS TO ROPE CERTIFICATES

Lankhorst Ropes is able to offer 24/7 access to fibre rope and steel wire rope certificates, regardless of the time zone.

Certificates may be mislaid during filing or transportation but can be required immediately to trace and identify ropes. By providing direct access to rope certificates, Lankhorst customers will be able to instantaneously check all of their ropes' details including construction, diameter, length, minimum breaking load and end termination.

ROPE SOLUTION OVERVIEW

Mooring lines

single		LANKO®FORCE ø 34mm	143kg / 220m MBF: 991 kN	TCLL: 100%	EWL tails of EUROFLEX® ø 72mm	53,7 kg / 11m MBF: 1.270 kN	TCLL: 79,6%	196kg	LANKO®FORCE: 2,2% EUROFLEX®: 12,5%	<ul style="list-style-type: none">• 7 times lighter than steel wire rope• Easier rope handling reduces mooring time• Reduced snap-back risk due to low elongation of LANKO®FORCE• High rope flexibility
single		6x36WS+IWRC ø 38mm	1.258kg / 220m MBLF 1.008 kN	TCLL: 60%	EWL tails of EUROFLEX® ø 72mm	53,7 kg / 11m MBF: 1.270 kN	TCLL: 79,6%	1.312kg	6x36WS+IWRC: 1-2% EUROFLEX®: 12,5%	<ul style="list-style-type: none">• Traditional steel wire mooring system• Proven track record
		STRONGLINE ø 56mm	499,4kg / 220m MBF: 995 kN	TCLL: 70%				499,4kg	7,5%	<ul style="list-style-type: none">• Good form stability on split drum winch• Excellent abrasion resistance due to polyester jacket• A3 splice with 100% efficiency• Excellent tension – tension fatigue resistance
		TIPTO®WINCHLINE ø 70mm	528kg / 220m MBF: 990 kN	TCLL: 70,7%				528kg	8,5%	<ul style="list-style-type: none">• Excellent form stability on split drum winch• Outstanding abrasion resistance due to TIPTO® jacket• Improved safety due to non-load bearing jacket and bright yellow colour• A3 splice with 100% efficiency
		EUROFLEX® ø 64mm	578,6kg / 220m MBF: 1.010 kN	TCLL: 79,6%				578,6kg	12,5%	<ul style="list-style-type: none">• Rope built for extremely long service life• Good heat resistance• Extremely high TCLL value and energy absorption• Excellent tension – tension fatigue resistance
		EUROFLOAT® PREMIUM ø 72mm	605kg / 220m MBF: 1.000 kN	TCLL: 75,1%				605kg	15%	<ul style="list-style-type: none">• Floating rope, reduced risk of entangling in propeller• High TCLL value• Good tension – tension fatigue resistance• Good heat resistance
		EUROSTEEL ø 80mm	638kg / 220m MBF: 1.009 kN	TCLL: 62,6%				638kg	14%	<ul style="list-style-type: none">• Economical floating solution• 25% stronger than conventional 100% PP ropes



ROPE SELECTION



SYNTHETIC ROPES

HIGH MODULUS ROPES

LANKO®FORCE



12 strand braided rope, made of Dyneema® yarns. LANKO®FORCE is an excellent alternative for heavy and lumbbersome steel wire ropes in situations requiring manual handling of the rope. It is stronger than conventional steel wire rope, yet the corresponding weight is 7 times lower. The improved handling characteristics are especially suitable for towing and mooring applications. Another important benefit of LANKO®FORCE is that the rope is floating. Moreover, when replacing fibre rope, the reduction in rope diameter can lead to substantial savings in the weight and size of the mooring winches, for example, when incorporated in the design of a new build vessel the cost saving is substantial.

	SPECIFIC GRAVITY	0,98 (floating)
	UV-RESISTANCE	excellent
	ABRASION RESISTANCE	excellent
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 147 °C
	CONSTRUCTION	12 strand plaited
	TCLL VALUE	100%
	COLOUR	yellow
	WATER ABSORPTION	0%
	ELONGATION	2,2%
	QUICK BURY SPLICE	

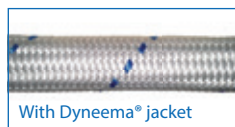
Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
092.006	3/4	6	2,3	1,5	35	3,57	7.868
092.008	1	8	3,9	3	62	6,32	13.938
092.010	1 1/4	10	5,9	4	97	9,89	21.806
092.012	1 1/2	12	9,3	6	137	13,97	30.799
092.014	1 3/4	14	10,6	7,5	184	18,76	41.365
092.016	2	16	14,3	9	244	24,88	54.853
092.018	2 1/4	18	18	12	303	30,90	68.117
092.020	2 1/2	20	21,5	14	374	38,14	84.079
092.022	2 3/4	22	28	19	450	45,89	101.164
092.024	3	24	33,5	23	533	54,35	119.823
092.026	3 1/4	26	37,5	25	612	62,41	137.583
092.028	3 1/2	28	43,5	29	701	71,48	157.591
092.030	3 3/4	30	51,5	35	789	80,45	177.374
092.032	4	32	59	40	887	90,45	199.406
092.034	4 1/4	34	65	44	991	101,05	222.786
092.036	4 1/2	36	71	48	1.076	109,72	241.894
092.038	4 3/4	38	80	54	1.191	121,45	267.747
092.040	5	40	88,5	59	1.314	133,99	295.399
092.044	5 1/2	44	109	73	1.559	158,97	350.477
092.048	6	48	126	85	1.853	188,95	416.571
092.052	6 1/2	52	149	100	2.160	220,26	485.587
092.056	7	56	176	118	2.490	253,91	559.774
092.060	7 1/2	60	202	136	2.820	287,56	633.961
092.064	8	64	230	155	3.210	327,32	721.637
092.068	8 1/2	68	259	174	3.610	368,11	811.560
092.072	9	72	290	195	4.010	408,90	901.484
092.080	10	80	358	241	4.510	459,88	1.013.888
092.088	11	88	430	289	5.320	542,48	1.195.984
092.096	12	96	510	343	6.230	635,27	1.400.560
092.104	13	104	600	403	6.800	693,40	1.528.701
092.112	14	112	695	467	7.810	796,39	1.755.758
092.120	15	120	798	536	8.870	904,47	1.994.055
092.128	16	128	910	611	9.970	1.016,64	2.241.345
092.136	17	136	1.030	692	11.100	1.131,87	2.495.379
092.144	18	144	1.150	773	12.400	1.264,43	2.787.631

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

optional:

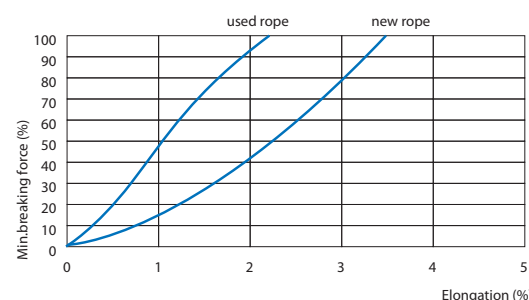


With polyester jacket



With Dyneema® jacket

ELONGATION:



WINCHLINES

TIPTO® WINCHLINE



A dedicated floating winch line developed especially for self tensioning winches. This load-bearing 7 strand core combines high strength and relatively low elongation. The non-load-bearing braided jacket provides protection of the core for longer service life, and increases crew safety by minimizing the risk of snap-back. 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.

	SPECIFIC GRAVITY	0,93 (floating)
	UV-RESISTANCE	very good
	ABRASION RESISTANCE	very good
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 140 °C
	CONSTRUCTION	7 strand + jacket

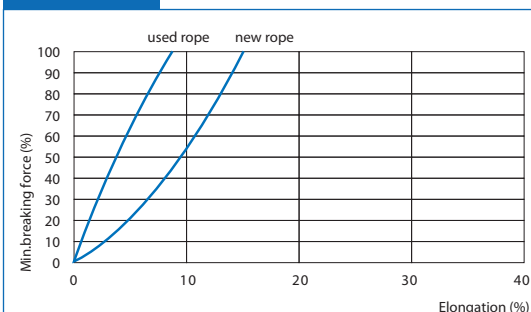
	TCLL VALUE	70,7%
	COLOUR	yellow
	MARKER YARN	orange
	WATER ABSORPTION	0%
	ELONGATION	8,5%
	A3 SPLICE	

Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
111.952	4 1/2	36	74	50	248	25,29	55.753
111.953	5 1/4	42	98	66	340	34,67	76.435
111.934	5 3/4	46	115	77	425	43,34	95.544
111.956	6	48	125	84	472	48,13	106.110
111.935	6 1/4	50	133	89	512	52,21	115.102
111.936	6 3/4	54	150	101	598	60,98	134.436
111.896	7	56	160	108	640	65,26	143.878
111.937	7 1/4	58	167	112	682	69,54	153.320
111.967	7 1/2	60	184	124	730	74,44	164.111
111.966	7 3/4	62	190	128	780	79,54	175.351
111.938	8	64	203	136	850	86,67	191.088
111.939	8 1/2	68	221	149	934	95,24	209.972
111.970	8 3/4	70	240	161	990	100,95	222.561
111.940	9 1/4	74	256	172	1.100	112,17	247.290
111.941	10	80	355	239	1.270	129,50	285.507
111.942	10 1/4	82	380	255	1.350	137,66	303.492
111.898	10 1/2	84	395	265	1.420	144,80	319.229

Larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:

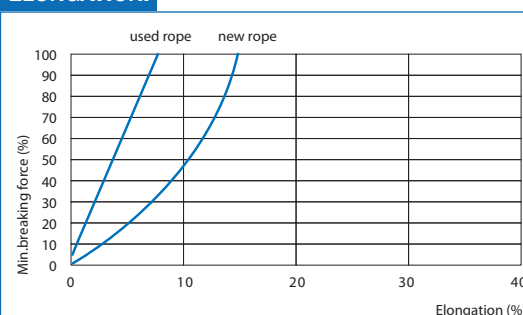


STRONGLINE™

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. The main applications of STRONGLINE™ are towing and mooring.

When STRONGLINE™ is installed on a towing winch, twists in the rope during installation can reduce the service life of the rope once put to work. To prevent twisting, it is crucial to use a turning table for unwinding from a coil. To facilitate the installation and avoiding induced twisting, a longitudinal marking has been added to the STRONGLINE™ during manufacture. Please make sure the longitudinal marking line is always on the same position while winding up the STRONGLINE™ on your towing winch.

ELONGATION:

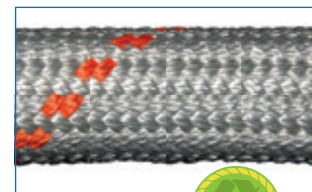


Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
081.056	7	56	227	152	995	101,46	223.685
081.060	7 1/2	60	256	172	1.130	115,23	254.034
081.064	8	64	284	190	1.270	129,50	285.507
081.068	8 1/2	68	307	206	1.420	144,80	319.229
081.072	9	72	367	246	1.570	160,09	352.950
081.076	9 1/2	76	390	261	1.730	176,41	388.920
081.080	10	80	417	280	1.890	192,72	424.889
081.088	11	88	493	330	2.250	229,43	505.820
081.092	11 1/2	92	528	354	2.450	249,83	550.782
081.096	12	96	560	375	2.630	268,18	591.248

Other diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

	SPECIFIC GRAVITY	1,38
	UV-RESISTANCE	excellent
	ABRASION RESISTANCE	excellent
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 265 °C
	CONSTRUCTION	parallel cores with jacket
	TCLL VALUE	70%
	COLOUR	white
	MARKER YARN	orange
	WATER ABSORPTION	< 1%
	ELONGATION	7,5%
	A3 SPLICE	



SOFT ROPES

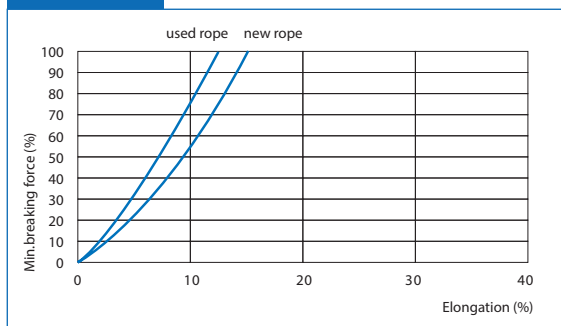
EUROFLEX®



Continuing industry demand for mooring and towing ropes with higher strength AND smaller diameters, has led to the development of EUROFLEX®. Its excellent handling properties, softness and flexibility, combined with high energy absorption capability and abrasion resistance, make the EUROFLEX® one of the best ropes available today for mooring and towing for both shipping and offshore operations.

	SPECIFIC GRAVITY	1,14
	UV-RESISTANCE	good
	ABRASION RESISTANCE	very good
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 165°C/ 265°C
	CONSTRUCTION	8 strand plaited
	TCLL VALUE	79,6%
	COLOUR	white
	MARKER YARN	yellow
	WATER ABSORPTION	<0,5%
	ELONGATION	12,5%

ELONGATION:



Made of:

47% polyolefin
53% polyester

Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
152.418	5	40	102	69	411	41,91	92.396
152.419	5 1/2	44	124	83	493	50,27	110.831
152.420	6	48	148	99	583	59,45	131.064
152.429	6 1/2	52	173	116	680	69,34	152.870
152.430	7	56	201	135	784	79,94	176.250
152.427	7 1/2	60	231	155	896	91,37	201.429
152.428	8	64	263	177	1.010	102,99	227.057
152.426	8 1/2	68	296	199	1.140	116,25	256.282
152.424	9	72	332	223	1.270	129,50	285.507
152.425	9 1/2	76	370	249	1.410	143,78	316.981
152.431	10	80	411	276	1.550	158,05	348.454
152.432	11	88	497	334	1.870	190,68	420.393
152.422	12	96	590	396	2.210	225,35	496.828
152.434	13	104	689	463	2.570	262,06	577.759
152.435	14	112	803	540	2.970	302,85	667.683
152.436	15	120	923	620	3.380	344,66	759.854
152.437	16	128	1.050	706	3.830	390,55	861.018
152.438	17	136	1.187	798	4.300	438,47	966.678
152.439	18	144	1.334	896	4.800	489,46	1.079.083

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.





EUROFLOAT® PREMIUM



SPECIFIC GRAVITY 0,98 (floating)



UV-RESISTANCE good



ABRASION RESISTANCE very good



CHEMICAL RESISTANCE good



MELTING POINT approx. 165 °C/ 260 °C



CONSTRUCTION 8 strand plaited



TCLL VALUE 75,1%



COLOUR off white



MARKER YARN two green markers



WATER ABSORPTION 0,1%



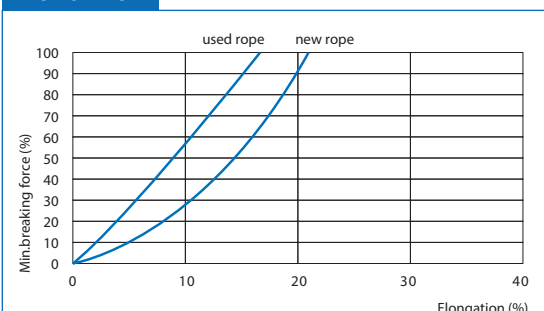
ELONGATION 15%

Using our latest in-house extrusion technology, Lankhorst has developed EUROFLOAT® PREMIUM rope to meet the requirements of today's modern tanker fleet. This floating high performance rope is constructed from high strength polyolefin and polyester yarns. It is manufactured to the latest EN and ISO standards, and complies with OCIMF recommendations. The rope's floating characteristic makes it a safe rope to work with, while its high TCLL value ensures excellent fatigue resistance.

Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
152.632	4	32	53	36	207	21,11	46.535
152.636	4 1/2	36	67	45	259	26,41	58.226
152.640	5	40	85	57	324	33,04	72.838
152.644	5 1/2	44	99	67	377	38,44	84.753
152.648	6	48	120	80	456	46,50	102.513
152.652	6 1/2	52	141	95	534	54,45	120.048
152.656	7	56	162	109	613	62,51	137.808
152.660	7 1/2	60	188	126	701	71,48	157.591
152.664	8	64	216	145	799	81,47	179.622
152.669	8 1/2	68	245	165	900	91,77	202.328
152.672	9	72	275	185	1.000	101,97	224.809
152.676	9 1/2	76	305	205	1.098	111,96	246.840
152.680	10	80	339	218	1.205	122,87	270.895
152.688	11	88	411	276	1.470	149,90	330.469
152.696	12	96	490	319	1.735	176,92	390.044

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:



Made of:

84% polyolefin
16% polyester

EUROFLEX® MOORING TAIL

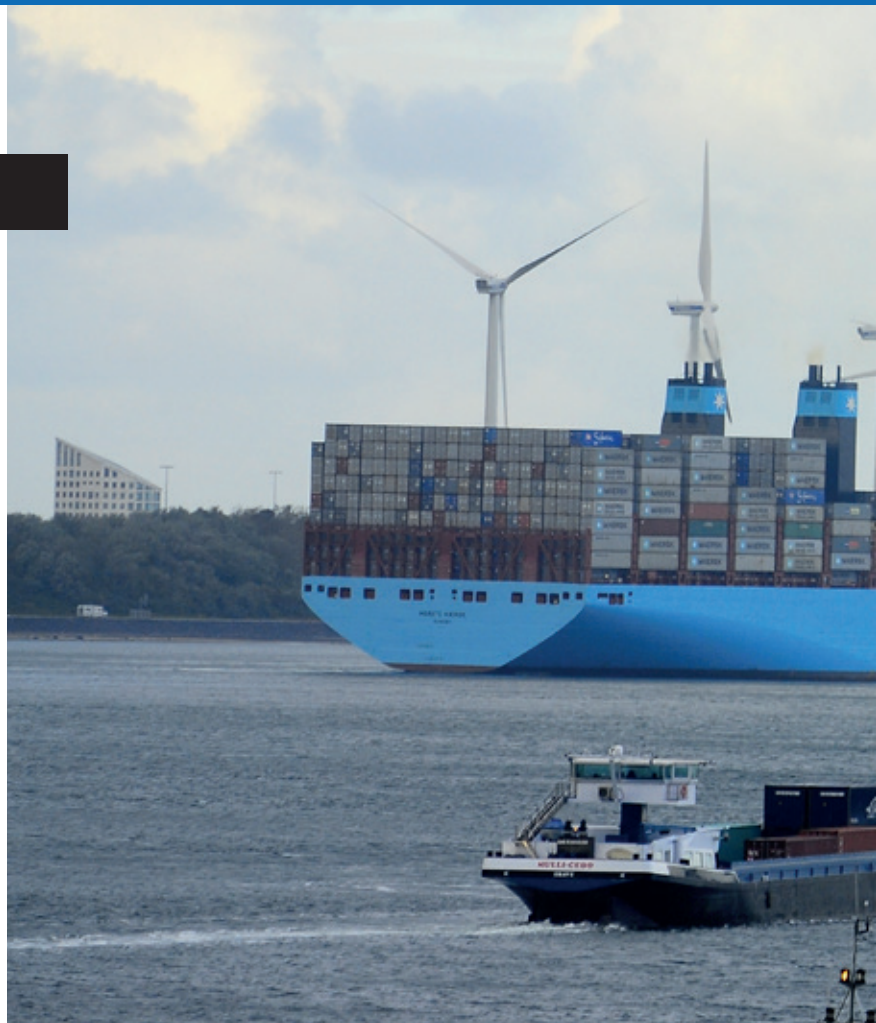
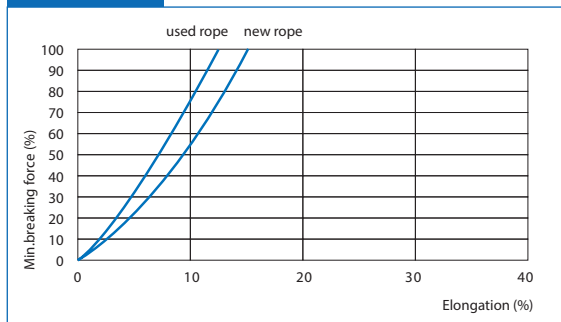


Mooring tails absorb shock/energy within the mooring system. The EUROFLEX® MOORING TAILS surpass nylon tails in quality, as a result the energy absorption is greater, and the rope remains elastic for longer. Moreover, the rope does not lose a large portion of its dry MBF when wet. As the EUROFLEX® MOORING TAILS' 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, the EUROFLEX® MOORING TAILS are also available in 22 m EWL. Both versions are fitted with two protected and spliced eyes of 2 m and 1 m respectively.

OCIMF recommends mooring tails with a MBF of 125% related to the steel wire rope mooring line. Both versions are fitted with two protected and spliced eyes of 2 m and 1m respectively.

	SPECIFIC GRAVITY	1,14
	UV-RESISTANCE	good
	ABRASION RESISTANCE	very good
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 165 °C/ 265 °C
	CONSTRUCTION	8 strand plaited
	TCLL VALUE	79,6%
	COLOUR	white
	MARKER YARN	yellow
	WATER ABSORPTION	<0,5%
	ELONGATION	12,5%

ELONGATION:



Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m) (lbs/100 ft)		Minimum Breaking Force (kN) (Mt) (lbs)		
EWL: 11m							
152.448	6	48	22,6	50	583	59,45	131.064
152.450	7	56	32,5	72	784	79,94	176.251
152.447	7 1/2	60	37,4	82	896	91,37	201.430
152.449	7 3/4	62	40,1	88	955	97,38	214.694
152.451	8	64	42,5	94	1.010	102,99	227.058
152.454	8 1/2	68	48	106	1.140	116,25	256.284
152.452	9	72	53,7	118	1.270	129,50	285.509
152.455	9 1/2	76	63,4	140	1.410	143,78	316.982
152.453	10	80	70,4	155	1.550	158,05	348.456
152.446	10 1/2	84	77,6	171	1.710	174,37	384.425
152.456	11	88	85,1	188	1.870	190,68	420.395
152.444	12	96	101,2	223	2.210	225,35	496.830
EWL: 22m							
152.462	7 1/2	60	61,6	136	896	91,37	201.430
152.460	9	72	88,5	195	1.270	129,50	285.509
152.461	10	80	113,4	250	1.550	158,05	348.456
152.463	11	88	137,2	302	1.870	190,68	420.395
152.465	12	96	163	359	2.210	225,35	496.830

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

Made of:

47% polyolefin
53% polyester



TIPTO®EIGHT

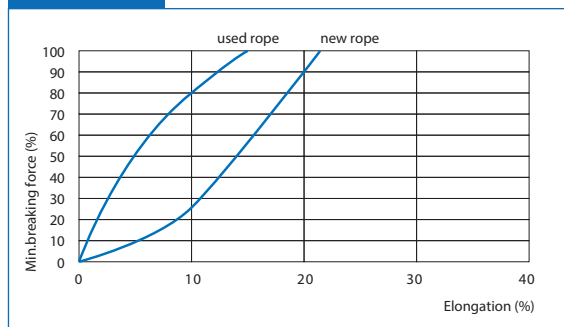


A high-performance mooring rope, TIPTO®EIGHT's strength, abrasion resistance and energy absorption ensure a long service life and low cost of ownership. The rope's small diameter and low weight make handling easier on board. As TIPTO®EIGHT is a floating rope, the risk of getting the rope caught in the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

Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
111.693	5	40	75,6	51	269	27,43	60.474
111.721	5 1/2	44	92,4	62	321	32,73	72.164
111.695	6	48	109	73	378	38,54	84.978
111.737	6 1/2	52	128	86	441	44,97	99.141
111.697	7	56	149	100	508	51,80	114.203
111.698	7 1/2	60	171	115	578	58,94	129.940
111.699	8	64	194	130	651	66,38	146.351
111.700	8 1/2	68	220	148	731	74,54	164.335
111.701	9	72	246	165	814	83,00	182.994
111.703	10	80	305	205	992	101,15	223.010
111.735	11	88	369	248	1.180	120,32	265.275
111.705	12	96	438	294	1.400	142,76	314.733
111.741	13	104	515	346	1.620	165,19	364.190
111.743	14	112	596	400	1.870	190,68	420.393
111.691	15	120	686	461	2.130	217,20	478.843
111.744	16	128	779	523	2.410	245,75	541.790
111.746	17	136	880	591	2.710	276,34	609.232
111.739	18	144	987	663	3.030	308,97	681.171

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:



SPECIFIC GRAVITY	0,93 (floating)
UV-RESISTANCE	very good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 140 °C
CONSTRUCTION	8 strand plaited













TOLL VALUE	70,7%
COLOUR	yellow
MARKER YARN	orange
WATER ABSORPTION	0%
ELONGATION	14%

EUROSTEEL

An all purpose 8 strand plaited mooring rope made from high strength monofilament fiber. The EUROSTEEL rope does not absorb water, has a high breaking load in relation to the diameter of the rope, whilst still floating. The EUROSTEEL rope is designed as general purpose rope and can be used for various applications, such as mooring and towing

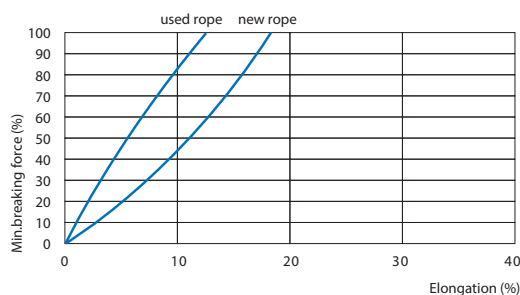


	SPECIFIC GRAVITY	0,91 (floating)		CONSTRUCTION	8 strand plaited
	UV-RESISTANCE	good		TCLL VALUE	62,6%
	ABRASION RESISTANCE	good		COLOUR	black & white
	CHEMICAL RESISTANCE	good		WATER ABSORPTION	0,1%
	MELTING POINT	approx. 169 °C		ELONGATION	14%

Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
122.532	4	32	46	31	180	18,35	40.538
122.536	4 1/2	36	58,5	39	227	23,15	51.113
122.540	5	40	72	48	276	28,14	62.128
122.544	5 1/2	44	88	59	327	33,34	73.584
122.548	6	48	104	70	383	39,05	86.142
122.552	6 1/2	52	122	82	445	45,38	100.022
122.556	7	56	142	95	509	51,90	114.342
122.560	7 1/2	60	163	110	583	59,45	131.086
122.564	8	64	185	124	660	67,30	148.270
122.572	9	72	234	157	825	84,13	185.503
122.580	10	80	290	195	1.009	102,89	226.922
122.588	11	88	351	236	1.215	123,89	273.188
122.596	12	96	417	280	1.431	145,92	321.657

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:

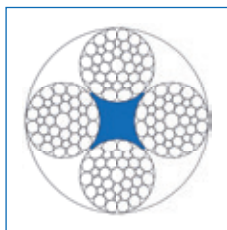






STEEL WIRE ROPES

LANKO®FOUR & LANKO®FOUR COMPACTED



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, LANKO®FOUR has proved its quality in the maritime industry for well over 20 years now and is now used by most major shipping companies worldwide. Some ship cranes are designed for a higher pay load; the LANKO®FOUR COMPACTED wire rope has a higher MBF to accommodate this and to maintain the required safety factors. Both LANKO®FOUR versions have a thick outer wire making the wire robust and impact resistant in the often harsh conditions of loading and discharging.

LANKO®FOUR

Art. number	Diameter (mm)	Weight (kg/100m) (lbs/100 ft)	Minimum Breaking Force (kN) (Mt) (lbs)
290.172*	12,6	66 10,5	112 11,42 25.178
290.618	18	120 81	225 22,94 50.582
290.620	20	150 101	280 28,55 62.947
290.622	22	188 126	345 35,18 77.559
290.624	24	226 152	400 40,79 89.924
290.626	26	256 172	470 47,93 105.660
290.628	28	304 204	555 56,59 124.769
290.630	30	349 235	635 64,75 142.754
290.632	32	397 267	725 73,93 162.986
290.635	34	429 288	805 82,09 180.971
290.636	36	497 334	900 91,77 202.328
290.638	38	556 374	1010 102,99 227.057

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

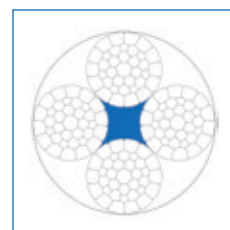
*tensile strength: 1770 N/mm²



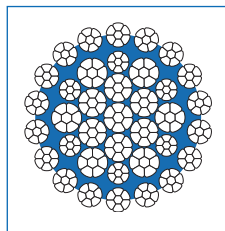
LANKO®FOUR COMPACTED

Art. number	Diameter (mm)	Weight (kg/100m) (lbs/100 ft)	Minimum Breaking Force (kN) (Mt) (lbs)
292.633	32	439 297	895 91,26 201.208
292.635	34	499 338	1.015 103,50 228.186
292.637	36	551 373	1.133 115,53 254.714

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.



LANKO®LIFT COMPACTED



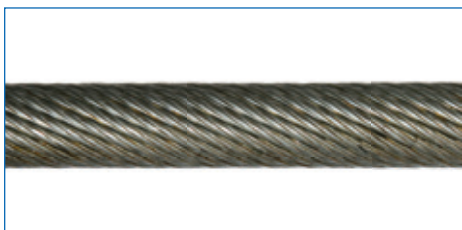
Galva- nized	Greased	1960	RHLL	<i>Optional</i> RHRL
Compact	Plastic Coated Core	Swivel	LHRL	LHLL

Multi strand, non-rotating, hoisting wire rope. During the LANKO®LIFT COMPACTED 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.

Art. number	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
293.526	26	327,0	219,1	634,2	64,67	142.695
293.528	28	380,2	254,7	734,0	74,85	165.150
293.530	30	439,1	294,2	846,3	86,30	190.420
293.532	32	497,7	333,5	959,6	97,85	215.910
293.534	34	558,6	374,3	1.079,3	110,06	242.843
293.536	36	631,4	423,0	1.221,5	124,56	274.838
293.538	38	701,4	469,9	1.352,4	137,90	304.290
293.540	40	774,4	518,8	1.495,0	152,45	336.375
293.542	42	851,9	570,8	1.645,2	167,76	370.170
293.544	44	940,0	629,8	1.818,6	185,44	409.185
293.546	46	1.037,4	695,1	1.995,7	203,50	449.032
293.548	48	1.132,0	758,4	2.184,3	222,73	491.470

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

LANKO®PACK

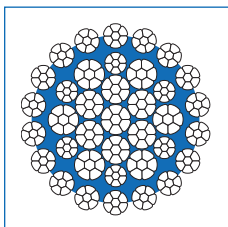


Compacted multi strand, non-rotating, hoisting wire rope. The construction ensures great flexibility, making this wire rope suitable for use on "European" types of cranes. The galvanization and internal/external lubrication provide protection against the environment. Our controlled production process and material selection, ensure the LANKO®PACK wire rope the highest quality level available today. The compacting gives this wire rope added breaking strength for those circumstances where it is needed.

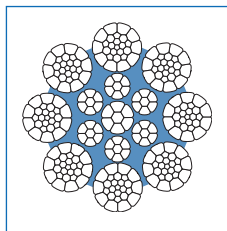
Art. number	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
291.020	10	48	32,2	96,9	9,88	21.783
291.023	12	68,3	45,8	137,3	14,00	30.865
291.026	13	81,6	54,8	165,7	16,90	37.250
291.034	14	94,9	63,7	192,5	19,63	43.275
291.101	15	108,8	73	220,6	22,49	49.592
291.239	16	124,5	83,5	251,4	25,64	56.516
291.249	18	156,2	104,8	317,7	32,40	71.420
291.241	19	175,7	117,9	355,9	36,29	80.008
291.242	20	193	129,5	393	40,07	88.348
291.243	22	234,2	157,1	474,7	48,41	106.714
291.244	24	279	187,2	567,4	57,86	127.553
291.246	25	304,3	204,2	616,6	62,87	138.614
291.238	26	327	219,4	666,1	67,92	149.741
291.240	28	380,2	255,1	770,9	78,61	173.301
291.245	30	439,1	294,6	888,8	90,63	199.805
291.248	32	497,7	333,9	1.007,8	102,77	226.557
291.247	34	558,6	374,8	1.133	115,53	254.702
291.250	36	631,4	423,6	1.282,8	130,81	288.378
291.251	38	701,4	470,6	1.418,4	144,63	318.861
291.252	40	774,4	519,6	1.569	159,99	352.716

Larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.



Galva- nized	Greased	RHLL	2160	Compact	Swivel	<i>Optional</i> RHRL	LHRL	LHLL	Plastic Coated Core
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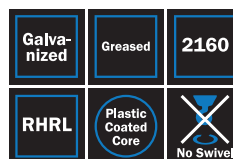
LANKO®TOP COMPACTED

Art. number	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
291.533	12	64,9	44	133	13,56	29.900
291.611	13	76,9	52	156	15,91	35.071
291.488	14	90,3	60	187	19,07	42.040
291.535	15	102,6	69	214	21,82	48.110
291.613	16	116	78	242	24,68	54.404
291.581	18	149,4	100	307	31,30	69.017
291.582	19	164,1	110	342	34,87	76.886
291.559	20	183,6	123	379	38,65	85.204
291.592	22	221,5	148	459	46,80	103.189
291.596	24	263,5	176	556	56,70	124.996
291.600	26	310,6	208	655	66,79	147.252
291.603	28	357,1	239	748	76,27	168.160
291.605	30	411,6	276	864	88,10	194.288
291.227	32	467,2	313	968	98,71	217.619
291.608	34	529,4	355	1.091	111,25	245.271
291.624	36	584,2	391	1.217	124,10	273.597
291.627	38	657,9	441	1.332	135,82	299.452
291.631	40	729,8	490	1.479	150,81	321.371
291.634	42	797,8	536	1.613	164,48	362.624
291.636	44	900,1	604	1.820	185,59	431.642
291.638	46	978	656	1.975	201,39	444.007
291.640	48	1.061	710	2.155	219,75	484.473

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.



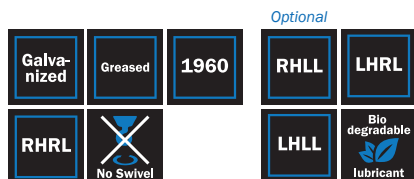
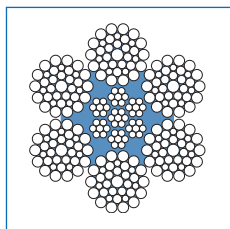
An 8 strand compacted luffing wire rope. During the LANKO®TOP COMPACTED production process, the core is covered by an especially designed HDPE extruded cover. This special feature gives the wire rope stability, and avoids point-to-point contact between wires of the outer and inner strands, as well as preventing corrosion and wear of the core. 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.



Optional

**6X36WS + IWRC**

Standard wire rope with higher breaking strength. Used for all kinds of purposes, i.e. luffing, mooring, towing, anchoring and coupling push barges. The independent wire rope core provides more strength and stability to the wire rope compared to a fibre core. Construction is according to ISO standard.



Art. number	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
292.039	30	368	247	628	64,04	141.000
281.108	32	419	281	715	72,91	161.000
281.893	34	472	316	807	82,29	181.000
281.891	36	530	355	904	92,18	203.000
281.894	38	590	396	1.008	102,79	227.000
281.913	40	654	440	1.120	114,21	252.000
281.914	42	721	485	1.230	125,42	277.000
281.915	44	792	532	1.350	137,66	304.000
281.916	46	866	582	1.480	150,92	332.000
281.918	48	942	633	1.610	164,17	362.000
281.919	50	1.020	687	1.740	177,43	390.000
281.923	51	1.060	715	1.820	185,59	409.000
282.109	52	1.110	743	1.890	192,72	425.000
282.114	54	1.190	801	2.040	208,02	460.000
282.130	56	1.280	862	2.190	223,31	492.000
282.108	58	1.380	925	2.350	239,63	528.000
282.123	60	1.470	989	2.510	255,94	564.000
282.126	62	1.570	1.060	2.680	273,28	603.000
282.135	64	1.680	1.130	2.860	291,63	643.000

Larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according to ISO 2408:2004 and EN 12385-4. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

Other steel wire ropes available such as (but not limited to):

Full range of accommodation ladder wires, lifeboat fall wires, rescue boat wires, rescue davit wires, bosun store davit wires, fuel oil hose handling davit wires, engine room crane wires, emergency cargo pump handling davit wires, cargo machinery room crane wires and provision crane wires.



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Full range available

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TIPTO®WEB sleeves are finished with a protective seam all around. Two large Velcro strips enable the sleeves to be applied easily and to accommodate different diameters of hawsers, two eyelets, one on either side, enable the crew to secure the sleeve in the right position on the hawser. The standard length is 3 meter.





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FOR LIFE**

Lankhorst | *Ropes*

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