

Lankhorst | *Ropes*

THROUGH LIFE, FOR LIFE



MARITIME

WET CARGO.



WireCo®
WorldGroup



▶ CONTENTS

LANKHORST ROPES ... THE VITAL CONNECTION	3
LANKHORST ROPES FOR WET CARGO	5
OUR ROPE SYSTEM	6
"THROUGH LIFE , FOR LIFE" SERVICE MODEL	7
ROPE SOLUTION OVERVIEW	10
ROPE SELECTION	12

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 main supplier for new built 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

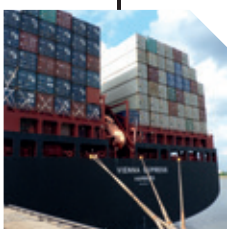
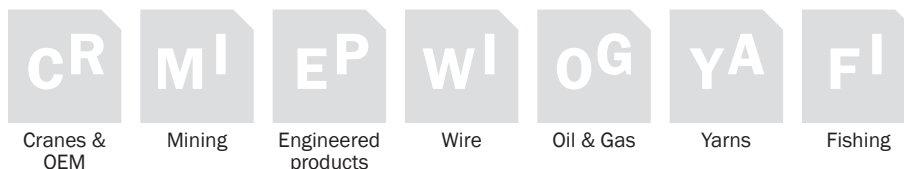
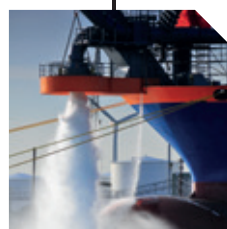
Lankhorst Ropes maintains stock points at strategic locations and main ports worldwide. Thanks to our widespread network and global presence, you are ensured continuity of supply, fast service and short delivery times. Our global network of stock points and local sales offices includes Algeciras, Bilbao, 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 WET CARGO



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

Wet cargo shipping companies operate in highly competitive global markets for transportation of non-edible and dangerous liquids, as well as edible non-dangerous liquids. Under increasing cost pressure, wet cargo carriers must operate as efficiently as possible. Optimising mooring and towing 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, mooring and towing for wet cargo vessels from Aframax oil tankers (75,000 - 115,000 DWT) through Suezmax (160,000 DWT) and VLCC (150,000 and 320,000) and up to T-1 supertankers (550,000 DWT). They offer outstanding service life performance and, as a result, low total cost of ownership.

Ease of handling, 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, tested to OCIMF Meg 3/4 recommendations, and offer full rope traceability. Moreover, 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.

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 wet cargo shipping operations remain efficient and cost-effective.

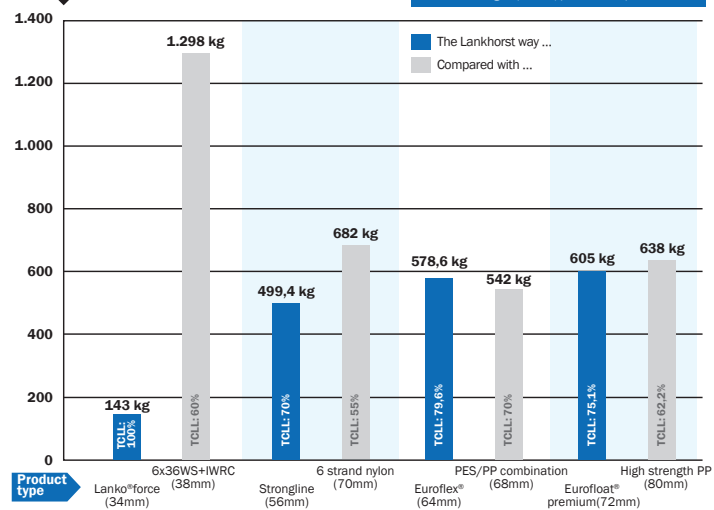
OUR ROPE SYSTEM

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



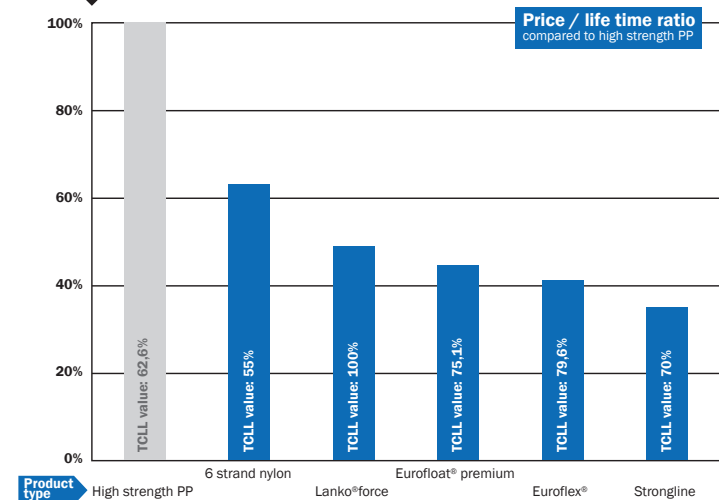
Weight (kg)
per coil of 220m

Rope comparison (1.000 kN)
based on weight (220m) / diameter / TCLL value



Price / life time ratio

Price / life time ratio
compared to high strength PP



'THROUGH LIFE, FOR LIFE' SERVICE MODEL



The cost and operational demands on wet 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

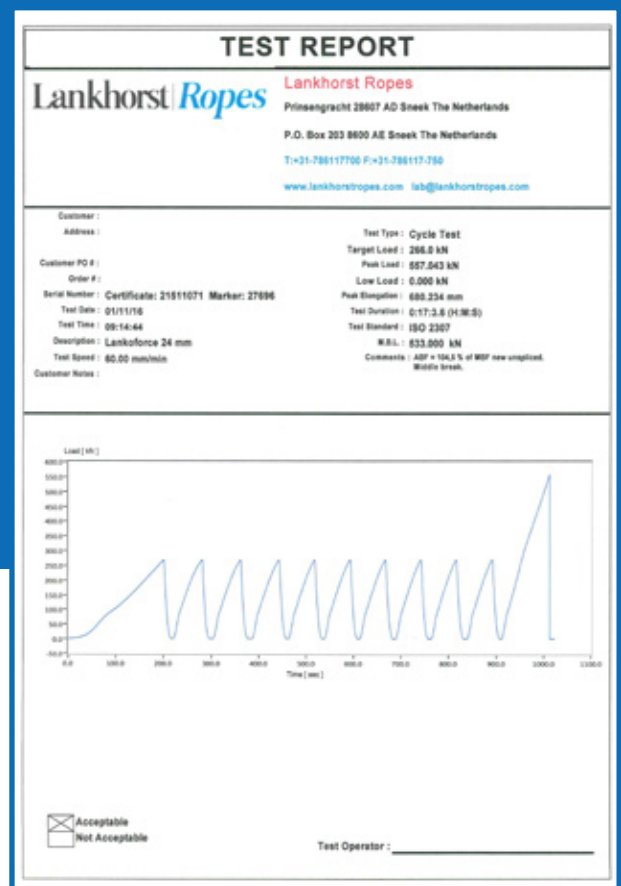
Lankhorst Ropes is committed to equipping crew with the knowledge and skills needed to ensure safe use of fibre ropes and maximum service life. Specifically, we provide:

- 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

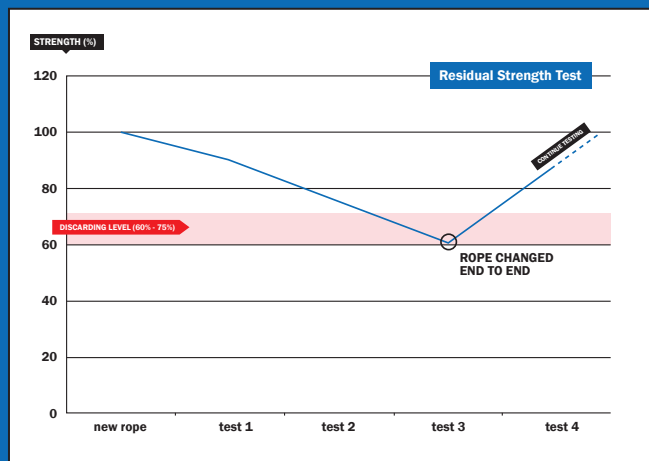


DEVELOPING SAFE RETIREMENT CRITERIA

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**

Minimalising risk and
increasing safety for
people and environment.



RECYCLING OF ROPES

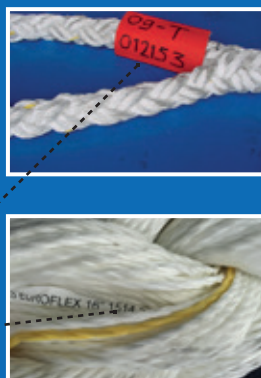
The two testing and recycling programmes can be combined. Ropes which are returned for testing and deemed unusable, can be used for recycling into other polymer products. On the image you see an offshore vessel with KLP® Deck Covers made by Lankhorst Engineered Products.

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.

Lankhorst Ropes	
CERTIFICATE OF ROPES (Certificate in accordance with EN 10226 type B 1)	
Rope supplied to:	Order number: Client number: Your reference:
Description: EUROFLAT PREMIUM 84 MM 8 STRANDS PLATED LONGWEAR 220 MTS BOTH ENDS PROTECTED 8745	
Diameter: Length (m): Construction (left): Mass per unit length (kg/m): Number of strands: Composition: Name: Identification: Quantity: Strength: Date: Remarks: Examination performed by:	84 MM 1 x 220.00 8 2700 8 STRANDS PLATED PLATED SAFETY HOLDERS/POLYESTER LANKHORST ROPES MARKING CODE 8745 KAW 8745/2020/01 NEDERLAND
Date of delivery: 09 Jul 2019	Name of delivery: Ropes are provided according to VIGOR guidelines
Name of party: Signature of competent person: [Signature]	Signature of competent person: [Signature]



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.





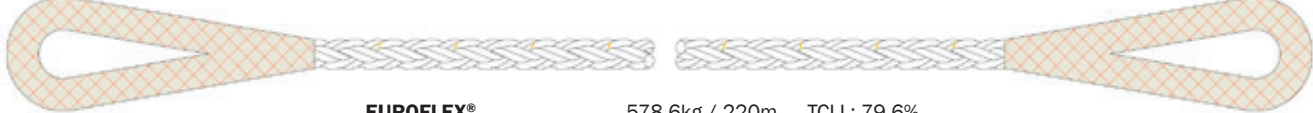

24/7 ACCESS TO ROPE CERTIFICATES

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

					Total weight	Elongation of used rope at break	Features
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
double		LANKO®FORCE ø 34mm 143kg / 220m MBF: 991 kN TCLL: 100%	EWL tails of EUROFLEX® ø 56mm 46 kg / 11m MBF: 1.332 kN TCLL: 79,6%		189kg		
single		6x36WS+IWRC ø 38mm 1.258kg / 220m MBF: 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
double		6x36WS+IWRC ø 38mm 1.258kg / 220m MBF: 1.008 kN TCLL: 60%	EWL tails of EUROFLEX® ø 56mm 46 kg / 11m MBF: 1.332 kN TCLL: 79,6%		1.304kg		
		EUROFLEX® ø 64mm 578,6kg / 220m MBF: 1.010 kN TCLL: 79,6%			578,6kg	EUROFLEX®: 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	EUROFLOAT® PREMIUM: 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

ROPE SELECTION

SYNTHETIC ROPES

HIGH MODULUS ROPES

LANKO®FORCE



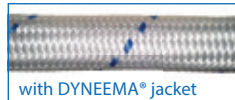
12 strand braided rope, made of DYNEEMA® yarns. LANKO®FORCE is an excellent alternative for heavy and lumbbersome steel wire ropes in situations requiring manual handling of the rope. It is stronger than conventional steel wire rope, yet the corresponding weight is 7 times lower. The improved handling 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
	TOLL VALUE	100%
	COLOUR	yellow
	WATER ABSORPTION	0%
	ELONGATION	2,2%
	QUICK BURY SPLICE	

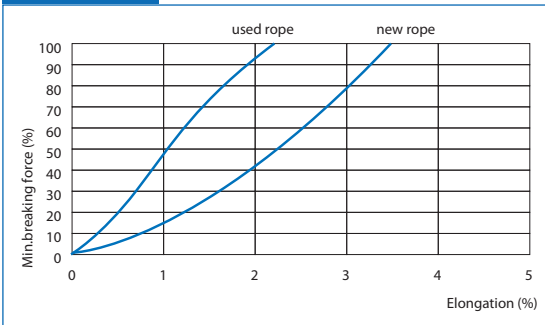
Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (lbs)
092.006	3/4	6	2,3	1,5	35	3,57	7.868
092.008	1	8	3,9	3	62	6,32	13.938
092.010	1 1/4	10	5,9	4	97	9,89	21.806
092.012	1 1/2	12	9,3	6	137	13,97	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:



ELONGATION:



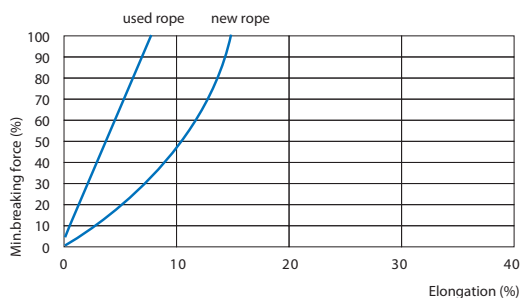
WINCHLINES

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. A major advantage of using STRONGLINE™ for mooring your product or crude carrier is that there is no requirement for mooring tails. This means a major cost and hassle reduction over the life of the vessel. No need for tail replacement every 18 months.

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:

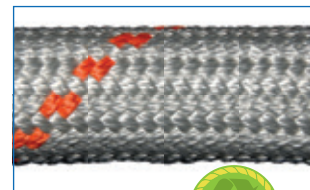


Art. number	Circ. (inches)	Diameter (mm)	Weight (kg/100m) (lbs/100 ft)		Minimum Breaking Force (kN) (Mt) (lbs)		
081.056	7	56	227	152	995	101,46	223.685
081.060	7 1/2	60	256	172	1.130	115,23	254.034
081.064	8	64	284	190	1.270	129,50	285.507
081.068	8 1/2	68	307	206	1.420	144,80	319.229
081.072	9	72	367	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
	TOLL VALUE	70%
	COLOUR	white
	MARKER YARN	orange
	WATER ABSORPTION	< 1%
	ELONGATION	7,5%
	A3 SPLICE	



SOFT ROPES

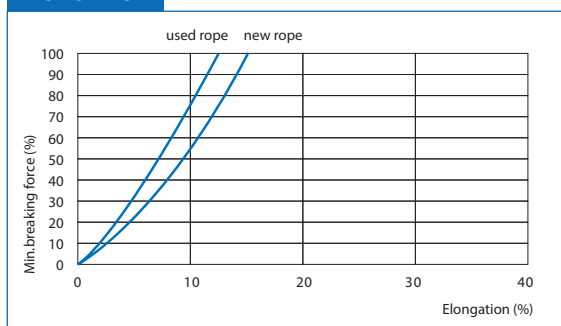
EUROFLEX®



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



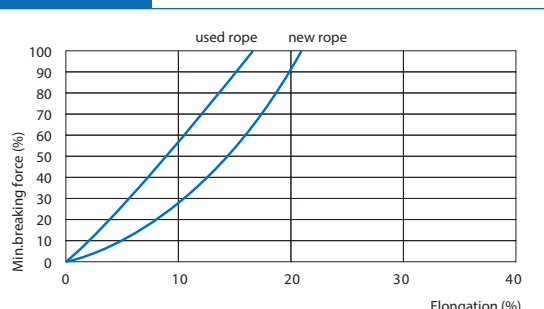
	SPECIFIC GRAVITY	0,98 (floating)
	UV-RESISTANCE	good
	ABRASION RESISTANCE	very good
	CHEMICAL RESISTANCE	good
	MELTING POINT	approx. 165 °C/ 260 °C
	CONSTRUCTION	8 strand plaited
	TCLL VALUE	75,1%
	COLOUR	off white
	MARKER YARN	two green markers
	WATER ABSORPTION	0,1%
	ELONGATION	15%

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

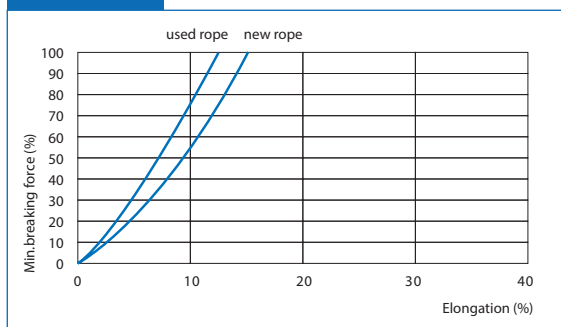


Mooring tails absorb shock/energy within the mooring system. The EUROFLEX® MOORING TAILS surpass nylon tails in quality, as a result the energy absorption is greater, and the rope remains elastic for longer. Moreover, the rope does not lose a large portion of its dry MBF when wet. As the EUROFLEX® MOORING 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 1m respectively.

OCIMF recommends mooring tails with a MBF of 125% related to the steel wire rope mooring line. EUROFLEX® MOORING TAILS have equal breaking strength under wet and dry conditions.

	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)	Weight (lbs/100 ft)	Minimum Breaking Force (kN)	Minimum Breaking Force (Mt)	Minimum Breaking Force (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

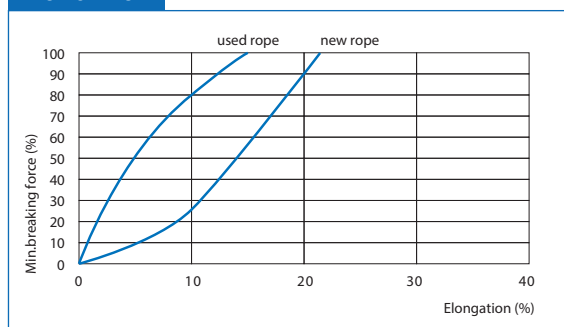


A high-performance mooring rope, TIPTO®EIGHT's strength, abrasion resistance and energy absorption ensure a long service life and low cost of ownership. The rope's small diameter and low weight make handling easier on board. As TIPTO®EIGHT is a floating rope, the risk of getting the rope caught in the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



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

TIPTO®TWELVE

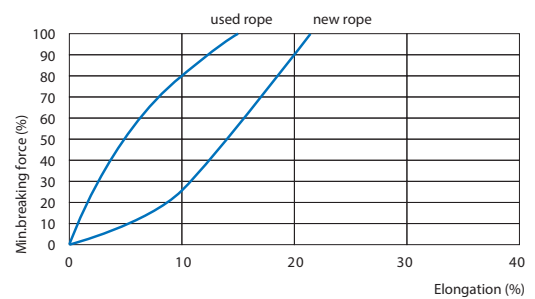
TIPTO®TWELVE, available in 16 mm to 48 mm diameter, is the successor of the well-known TIPTO®EIGHT. The construction is different, yet the material remains the same. The 12 strand braided construction makes the rope rounder, more stable, more compact and with a smoother surface. This increases abrasion resistance and, as a result, the service life of the rope. TIPTO®TWELVE can be used for mooring, using either bollards and/or winches. All TIPTO®TWELVE coils are supplied with a quality label, stating "Original product of Lankhorst Ropes". TIPTO®TWELVE ropes in the range from 32 mm up to 48 mm diameter have been upgraded with an extra marker yarn. The rope size can now easily (and above all) without mistake be identified.



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)
111.516	2	16	12,1	8	48	4,89	10.791
111.520	2 1/2	20	18,9	13	72,8	7,42	16.366
111.524	3	24	27,3	18	103	10,50	23.155
111.528	3 1/2	28	37,3	25	137	13,97	30.799
111.532	4	32	53	36	177	18,05	39.791
111.536	4 1/2	36	66	44	222	22,64	49.908
111.540	5	40	75,6	51	269	27,43	60.474
111.544	5 1/2	44	92,4	62	321	32,73	72.164
111.548	6	48	109	73	378	38,54	84.978

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

12 strand plaited



TCLL VALUE

70,7%



COLOUR

yellow



MARKER YARN

orange



WATER ABSORPTION

0%



ELONGATION

14%

LANKHORST ROPES PROTECTION SLEEVES



DEFENDER®

A high performance protection sleeve for permanent fixing on a hawser, towing line or pennant. The braided strands offer high abrasion resistance. The sleeve is made in a hollow braid, and can be easily be adjusted to the circumferential size of the rope being protected. The DEFENDER® can be made from different types of yarns, offering extra strength, floatability and other characteristics. Please consult our sales staff for the optimal product in your application.



TIPTO®WEB

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.

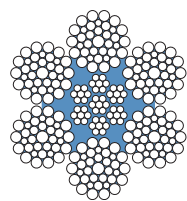


STEEL WIRE ROPES

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.



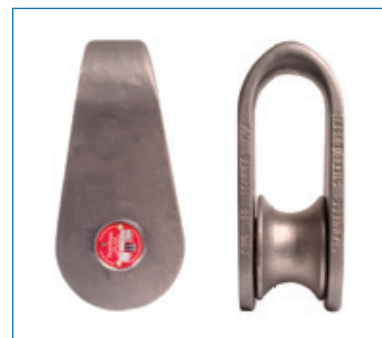
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