

KATRADIS GROUP OF COMPANIES

**Synthetic Mooring Ropes**

**Passion for High Quality**



EST. 1936

KATRADIS GROUP OF COMPANIES



EST. 1936

KATRADIS GROUP OF COMPANIES

## Pioneers on mooring lines.

**Katradis Group of Companies** has a long and distinguished history which goes back to the first half of the twentieth century. The company was established in 1936 by Konstantinos Katradis, operating back then as a ship supplier specializing in high quality mooring ropes.

Currently in the hands of third generation member of the Katradis family, the company has since then become **a pioneer in the field of manufacture of mooring ropes.**

Over the years we have developed extensive expertise in the design and development of **synthetic mooring ropes**, which are our mainline products.

Our rope factory in Greece, whose site covers an area of 30000m<sup>2</sup>, is one of the **most technologically advanced factories in Europe**, manufacturing top quality ropes for the safe mooring of commercial vessels.

**IMPROVED Mooring Ropes is a special category of marine ropes that have been developed by Katradis Group of Companies and have gained the trust of major shipping companies worldwide. Compared to commonly used mooring ropes, IMPROVED Mooring Ropes exhibit excellent performance and durability even in the most demanding applications.**



# Contents

Our history	p.8
Our success targets	p.10
Why choose IMPROVED Mooring Ropes	p.12
NIKA-Steel® fiber	p.14
Quality Control Testing	p.16
NFC Technology	p.18
Types of Mooring Ropes	p.22

**SYNTHETIC MOORING ROPES**

Improved Mixed NIKA-Steel®	p.26
Ultra Mixed NIKA-Steel®	p.28
NIKA-Flex Steel®	p.30
NIKA-Performance Steel	p.32
Reduced Snap Back ropes - RSB	p.34
NIKA-Cord® 8 Strand	p.36
NIKA-Force	p.38
NIKA-Polyester	p.40
NIKA-Nylon	p.42

**DOUBLE BRAIDE ROPES**

NIKA Double Braided	p.46
DualForce Ropes	p.50

Specifications of fibers	p.52
The protection for your mooring line	p.54
NIKA® Protector	p.56
Abrasion-The major enemy of mooring ropes	p.58
Mooring Tails	p.60
Single Leg Mooring Tails	p.64
Grommet Type Mooring Tails	p.65
Eye Protection	p.66
Mooring connection	p.67
Katradis global network	p.68

## Where Experts and Technology Make the Difference...

With more than 80 years of presence in the marine industry, we have proven our extensive expertise in the design and development of synthetic mooring ropes, which are our mainline products. Our rope factory in Greece, whose site covers an area of 30000 m<sup>2</sup>, is one of the most technologically advanced factories in Europe, manufacturing top quality ropes made of Polyolefin, Polyester, Nylon and also our Siri® High Performance Ropes (HMPE, ARAMID and LCP), all under ISO 9001:2015 & ISO 14001:2015 Quality System. By implementing continuous and breakthrough R&D activities by our expert Engineers, we can ensure that our high standard quality synthetic ropes will not only meet but also exceed the demands of the Shipping Industry.

### What differentiates us from other rope manufacturers?

- Perfectly balanced engineering expertise, superior product performance with extended service lifetime and unlimited support.
- Passionate people who take pride in delivering high quality operationally proven synthetic ropes.
- Our long history is a promise of what our customers can expect from our Mooring Ropes.

# Our history\_



**1936**

Established in 1936 as "Katradis Marine ropes" in Piraeus . Sells quality ropes to the fishing boats and to the agriculture industry.



**1946**

We distribute the first mooring rope on passenger vessel.



**1963**

Katradis Synthetic ropes entered the Marine Industry for the 1st time.



**1965**

We started the global network.



**1970**

Katradis develops the all time classic synthetic mooring rope "NIKA®-CORD", a major innovation for the next generation mooring ropes.



**2012**

Katradis Marine Ropes, along with the assistance of the University of Chemnitz, develops the Siri® Heat Setting Technology



**2018**

Over 8.000 vessels have been equipped with Katradis ropes for the last 10 years



**1944**



We create the first braided "double twisted" rope. The absolute rope for the sponge divers. The "double twisted" rope is still sold and used today!

**1953**



We supply the first mooring rope to the commercial steamship "Astypalaia" of shipowners A. Angelikousis, D. Efthimiou and P. Kaloudis

**1968**



We supply the first wire ropes for the marine industry



Katradis supplied the first anodes to commercial vessel.

**1995**



Launch of IMPROVED Mixed NIKA Steel rope, the ideal mixed rope with higher efficiency compared to common conventional ropes.

**1997**



We develop the first high performance mooring rope "SIRIUS" with HMPE fibers

**2017**



We develop the first LCP mooring rope with Vectran fibers

**2019**



Expansion of our Synthetic Ropes manufacturing plant with new establishment areas

**2020**



Development of the RSB (Reduced Snap Back) ropes with target to maximize the safety for crew on-board vessels.

# Our success targets

With numbers



KATRADIS MARINE ROPES INDUSTRY SA, knowing that the credibility and the quality of the products that it produces, have a catalytic effect on maintaining and enhancing its confidence in the Greek and the International market, is committed to maintaining the high quality of its products in accordance with the requirements of its customers and international specifications.

**85**

Years serving the marine industry

**8.158**

Vessels all around the world trust KATRADIS products

**73**

Service points all around the world

**9.920**

Satisfied customers

**Over 12.500**

Synthetic mooring ropes produced per year

**Over 3.500**

Tones of wire ropes produced per year



# Why choose

## Our IMPROVED Mooring Ropes



### High Quality

Our Ropes are produced from top quality fibers and raw materials selected under strict supervision for all manufacturing stages. Testing and certification of our ropes is issued as per the latest regulations and recommendations of OCIMF (MEG4).

### We offer worldwide:

- High Quality
- Unique rope manufacturing technologies
- Superior Service
- Robust-Good Practice Rope Construction
- Long Experience and know-how



# NIKA-Steel® fiber

Produced by KATRADIS MARINE ROPES INDUSTRY

NIKA-Steel® fibers are a special “melt mixture” of first quality virgin polyolefin raw materials (Polypropylene, Polyethylene and UV stabilizers) combined through a unique recipe that has been developed in-house. Produced in our specialized factory facilities, NIKA-Steel® fibers exhibit superior mechanical properties and are used in all manufacture of polyolefin or mixed synthetic ropes.



## Why UV stabilization?

It is well-known that sunlight exposure affects all polymer materials and of course synthetic fiber ropes, causing natural degradation of their properties and strength reduction.

NIKA-Steel® fibers exhibit very high resistance to sunlight because they are made using UV stabilizers in their molecular structure, which results in higher strength during their working life.



The starting point of rope manufacturing is the basic fibers which build the rope step-by-step.

## Unique Technology of Double Twisted rope yarns

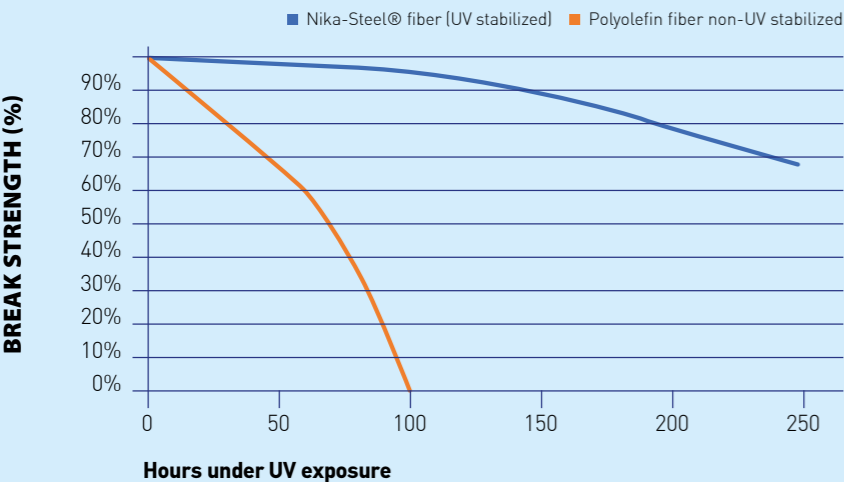
KATRADIS MARINE ROPES INDUSTRY SA has established effective techniques when it comes to twisting and braiding of synthetic fiber ropes, with aim on enhancement of performance and service lifetime. Double-twisting of rope yarns improves the resistance to fatigue and gives better performance of the rope in mooring operations, where cyclic loading can be very frequent.

Twisting stage 1: Single twisting		Twisting stage 2: Double twisting
X number of fibers	Rope yarn	Rope yarn Double twisted

## Single twist / Double twist Comparison

Double twisted rope yarns exhibit higher resistance to abrasion and cyclic loading fatigue than single twisted rope yarns. The Double twisted manufacturing practice is selected for longer service lifetime of mooring ropes

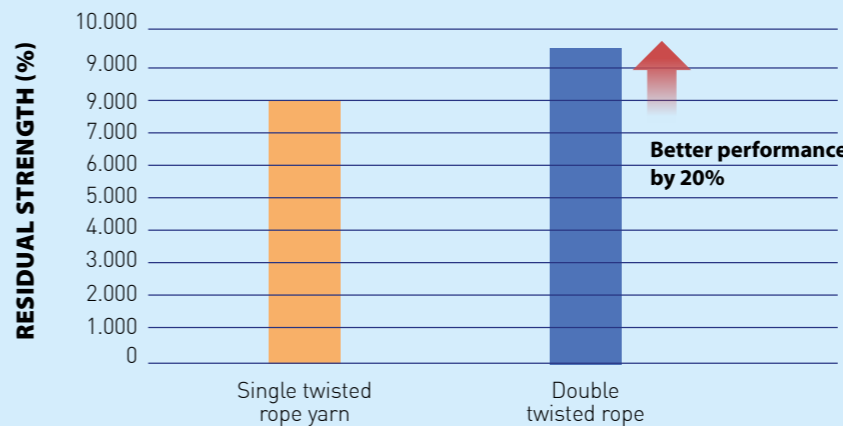
## The effect of UV exposure



Testing performed in special UV chamber according to ASTM G155

Graph showing the fiber strength reduction which normally comes due to UV effect after 250 hours. Fibers that are not UV stabilized show reduced residual strength over time.

## Abrasion cycles to failure



Test performed in-house at 50% of rope yarn strength



Setup for rope yarn Abrasion Test: Steel roller grips in cyclic motion

# Quality Control Testing

Quality Control is an essential part of all rope production stages that seals the effectiveness of our ropes. All fibre materials in our factory are tested through various properties by authorized personnel using high-tech equipment, in conditions according to DIN, ISO, and ASTM standards.



Fiber tensile strength testing in various temperatures as per MEG4 specifications (Testing at -20°C, 0°C, 20°C, 40°C, 60°C, 80°C)



Testing and inspection on every production stage



Yarn-on-Yarn abrasion testing as per ASTM D 6611



**UV resistance testing**  
Special UV chamber for acceleration aging and evaluation

Complete Base Design testing according to MEG4 requirements:

- New Straight Break Force
- Angled Break Force
- Angled Endurance
- Dynamic Stiffness
- TCLL (Thousand Cycle Load Level) test
- Axial compression

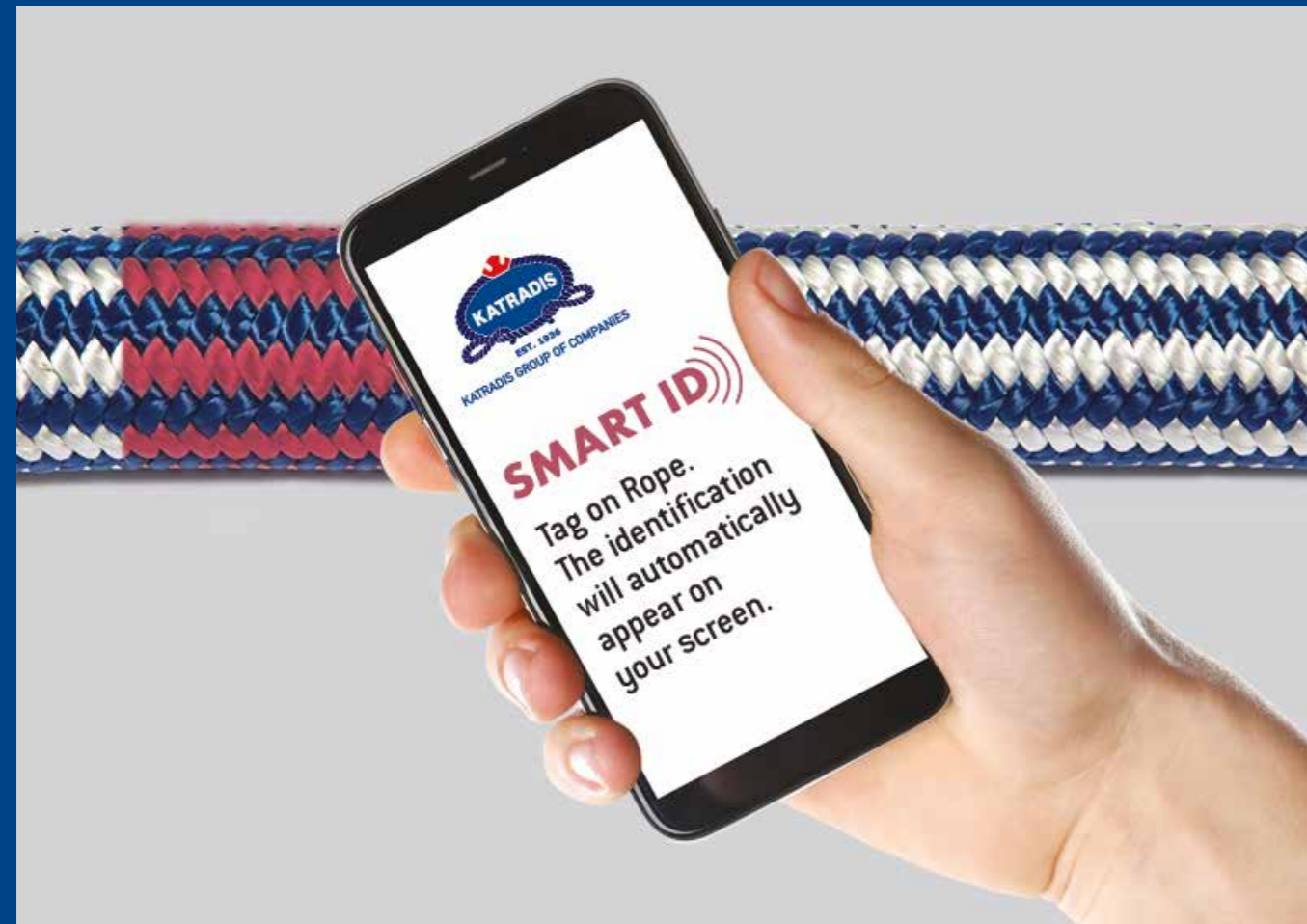
## NFC Technology on your Mooring Ropes

### NFC Technology In Mooring is an effective way of identification and digitalizing information

NFC stands for "Near Field Communication" and, as the name implies, it enables short-range communication between compatible devices. This requires at least one transmitting device, and another to receive the signal. A range of devices can use the NFC standard and will be considered either passive or active.

Passive device: NFC Tags which are inserted into synthetic fiber ropes.

Active device: Your smartphone.



Special NFC tags inserted into synthetic fiber ropes can be a very useful tool for on-board verification of a rope's identity.

## Procedure Step by Step

Focused on simplicity / simplicity in every step of mooring

### Find the NFC Tag on Rope.

#### Step 1st

The NFC tag area on the rope is easily distinguished by the colored zone near each eye splice.

### Approach your smartphone near the NFC

#### Step 2nd

Activate your smartphone and approach the NFC Tag surface in distance 10mm or less.

### Check your smartphone's screen

#### Step 3rd

The information you are expecting will automatically appear on your screen.



- Operating without needing power supply of their own or battery support, NFC tags can transmit data such as production code and certification number with the simple use of a smartphone.
- NFC tags embedded into the rope structure, ensure the digital identification of your rope

## SPECIFICATIONS

- Sealing material: Polyurethane 2-component elastomer material
- Maximum distance for data transmission: 10mm
- Device needed for NFC application: smartphone with NFC feature
- Recharge: Not needed
- Water resistance: Excellent

## BENEFITS

- > Simple identification of mooring lines with one contact
- > SMART ID inserted in your rope assures safety
- > It neither transmits nor uses electricity for your safety
- > Permanent function for the entire life of your rope

## Superior services

### Worldwide service and support, whenever you need it.

- Technical consultation in order to ensure that we supply the product that best suits your needs.
- On board inspections and residual strength testing, which maximize the healthy operational service life of the rope.
- On-site training courses for proper usage, inspection and retirement criteria.
- Comprehensive technical support materials: User's manuals, technical bulletins, repairing and splicing instructions.
- Special products for protection and maintenance of your ropes.
- 73 Service points all around the world.



## Robust, Good Practice Construction of rope

Having the right tools is the essential step for high quality marine rope production.

KATRADIS MARINE ROPES INDUSTRY has invested on mechanical equipment of the latest technology, which sets the basis in the procedure of rope manufacturing.

Designing and engineering every construction for every rope type is processed by our technical team of experts, who constantly deliver the most effective and optimal manufacturing processes.

**The result is strong and solid performance rope made for demanding applications of worldwide trading vessels.**



Fiber twisting stage determining the optimal twists per meter



Accurate manufacturing of the rope strands made of continuous layers of rope yarns



Construction of the final rope using the finest braiding layering equipment

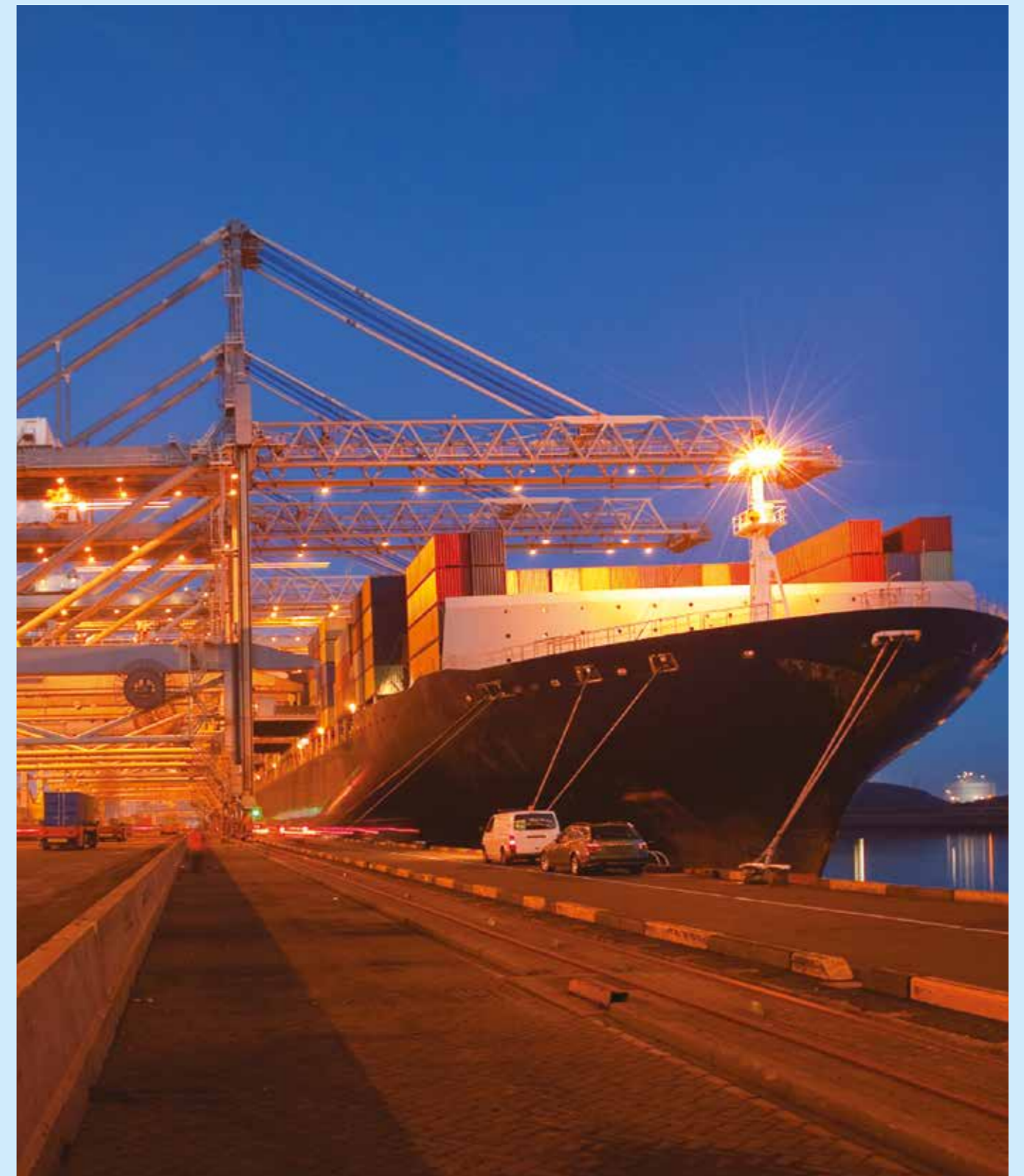


Eye termination splicing by our experienced personnel

## Long experience



With more than **80 years of marine ropes history**, we have extensive experience in the field of designing and developing ropes made of high quality fibers, good practice construction as well as supporting our long-time faithful customers.



# Types of Mooring Ropes

There are different types of mooring ropes depending on the material and the construction.

## Based on the material:

- **NIKA-Steel®**
- **Polyester**
- **Mixed Polyester/NIKA-Steel®**
- **Nylon**
- **HMPE**
- **LCP**
- **Aramid**

## Based on the construction:

### Single braided

Manufactured by a single continuous rope body

### Double braided

Two co-operating rope elements, internal core overbraided by cover



## Single braided:

- Ideal for easy and quick splicing on-board
- Easier to inspect on-board
- Easy to resplice when needed
- Rotation resistant
- Double-twist construction for increased abrasion and fatigue resistance
- Construction of 3- , 4- , 8- , 12- , 24- strands

## Double braided:

- Increased resistance to abrasion due to covering of the core
- Cover fully protects the inner core while contributing to the axial strength of the rope
- Better gripping when used on winch drums
- Rotation resistant
- Increased protection of the inner core from foreign particle adhesion
- Construction of 32-64- strands

## Basic Rope Terminology

**(MBL) Minimum Breaking Load:** Describes the force applied to a rope length under straight pull at the extent of partition. It is usually determined as per ISO 2307 standard.

**(MBLSD) Ship Design Minimum Breaking Load:** The MBL of a new, dry mooring line for which a ship's mooring system is designed. The MBLSD meets standard environmental criteria restraint requirements.

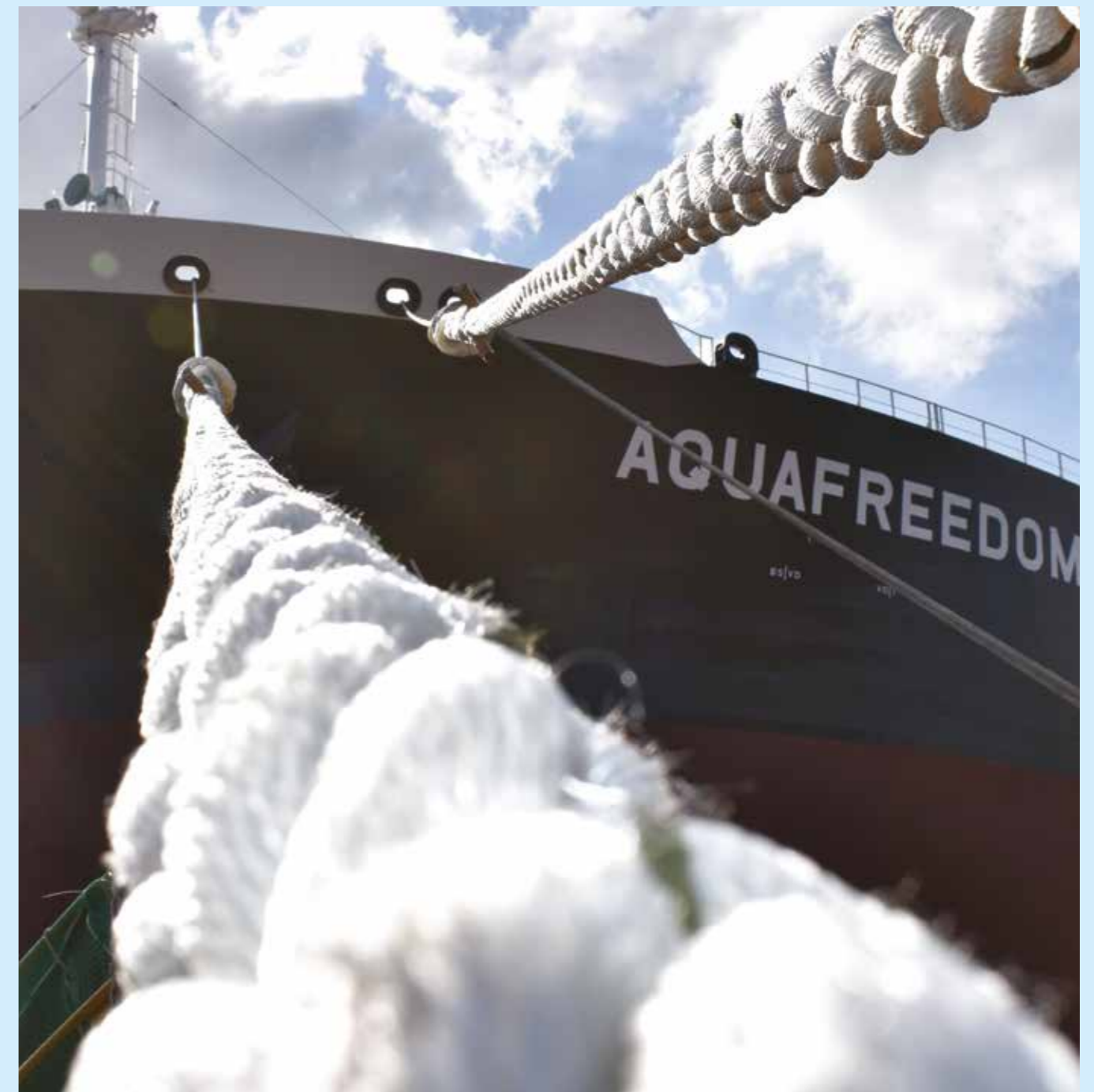
**(LDBF) Line Design Break Force:** The minimum break force at which a new, dry, spliced mooring line will break when tested acc. to CI1500B:2015. This value is declared by the manufacturer on each mooring line certificate. LDBF = 100% - 105% of MBLSD

**(TDBF) Tail Design Break Force:** The minimum break force at which a new spliced mooring tail will break when tested (in wet conditions) acc. to CI1500B:2015. TDBF = 125% - 130% of MBLSD

**As per  
MEG4**  
Mooring  
Equipment  
Guidelines  
4th edition

## Find the right Rope. For the right mooring operation. For your special vessel.

Whether you are a shipping company, ship supplier, shipyard or captain, we design - manufacture mooring ropes, hardware and services in order to meet the challenges that you face on your everyday tasks.





KATRADIS GROUP OF COMPANIES

**Synthetic Mooring Ropes**

# **Passion for High Quality**

Our synthetic mooring ropes are trusted for many years in the shipping industry.

# Improved Mixed NIKA-Steel®



## The “best-selling” mixed rope



Combination of specially twisted NIKA-Steel® fibers with high tenacity industrial grade Polyester fibers. Unique construction for maximum performance. Stabilized against UV degradation.

- BENEFITS**
- Floating
  - Long service lifetime
  - Same strength efficiency in both wet & dry conditions
  - Rotation resistant

- > Ideal for applications requiring floating properties and resistance to abrasion
- > Excellent endurance in mooring, anchoring and towing (Bulk Carrier- Container- Passenger- Tanker and military vessels)
- > Suitable for mooring tails



- CHARACTERISTICS**
- Balanced structure, accordant to international standard EN ISO 10556.
  - Excellent UV and chemical resistance
  - LR Type Approval as per MEG4

8-STRANDS				
Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	79	174	33	31,4
44	96	211	39	37,1
48	115	253	46	43,7
52	136	299	52	49,4
56	156	342	61	58,0
60	180	396	67	63,7
64	208	458	78	74,1
68	234	515	86	81,7
72	260	572	96	91,2
76	290	638	108	102,6
80	321	706	120	114,0
84	352	774	129	122,6
88	383	842	137	130,2
96	464	1.020	161	153,0

SPECIFICATIONS	
Specific gravity	0.99 (Floating)
Elongation at Break	15%-18%
Melting point	165°C(NIKA-Steel®) / 265°C (PES)

12/24-STRANDS				
Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	79	174	34	32,3
44	96	211	40	38,0
48	115	253	47	44,7
52	136	299	53	50,4
56	156	342	62	58,9
60	180	396	69	65,6
64	208	458	79	75,1
68	234	515	88	83,6
72	260	572	98	93,1
76	290	638	110	104,5
80	321	706	121	115,0
84	352	774	132	125,4
88	383	842	144	136,8
96	464	1.020	169	160,6

# Ultra Mixed NIKA-Steel®



## Efficient and Durable



**Increased percentage of high tenacity Polyester fibers combined with NIKA-Steel® fibers, designed for enhanced strength in mooring operations. Stabilized against UV degradation.**

### BENEFITS

- Strong performance
  - Firm handling
  - Easy operation for your safety
  - High tenacity properties
- > Robust construction to endure the demanding operations of commercial marine
  - > High quality raw materials
  - > Maintaining the same strength in wet and dry conditions.



### CHARACTERISTICS

- Rotation resistant construction which is important for the overall performance.
- Excellent UV and chemical resistance.
- Manufactured in custom made colors and rope lengths according to EN ISO 10556.

### 8-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos/100m	Kilos/220m	Tons	Tons
40	89	196	34	32,3
44	107	235	39	37,1
48	128	281	47	44,7
52	151	331	55	52,3
56	173	380	62	58,9
60	201	441	73	69,4
64	225	495	80	76,0
68	257	565	91,5	86,9
72	289	635	103	97,9
76	324	713	115	109,3
80	358	786	127	120,7
84	395	869	139	132,1
88	430	945	150	142,5
96	515	1.131	180	171,0

### SPECIFICATIONS

Specific gravity	1.11 (Floating)
Elongation at Break	15%-18%
Melting point	165°C(NIKA-Steel®)/265°C (PES)

### 12/24-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos/100m	Kilos/220m	Tons	Tons
40	89	196	36	34,2
44	107	235	41	39,0
48	128	281	49	46,6
52	151	331	57	54,2
56	173	380	64	60,8
60	201	441	75	71,3
64	225	495	82	77,9
68	257	565	93,5	88,8
72	289	635	105	99,8
76	324	713	117	111,2
80	358	786	129	122,6
84	395	869	140,5	133,5
88	430	945	152	144,4
96	515	1.131	183	173,9

# NIKA-Flex Steel



## Strong and flexible



**Optimized construction for achieving very high strength and wear resistance. Manufactured from equal percentages of NIKA-Steel® and high tenacity polyester fibers (w/w 50%-50% respectively). Stabilized against UV degradation.**

### BENEFITS

- Strong performance
  - Very high abrasion resistance
  - Firm handling
  - Reduced operational cost due to extended service lifetime
  - Easy operation for your safety
- > Structural stability  
> High quality raw materials  
> Same strength in wet and dry conditions



### CHARACTERISTICS

- Rotation resistant construction which is important for the overall performance.
- Excellent UV and chemical resistance.
- Manufactured in custom made colors and rope lengths according to EN ISO 10556.

### 8-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	Kilos /100m	Kilos /220m	Tons	Tons
40	102	224	44	41,8
44	124	273	52	49,4
48	147	323	60	57,0
52	172	378	70	66,5
56	200	440	81	77,0
60	230	506	91	86,5
64	262	576	103	97,9
68	296	651	116	110,2
72	331	728	128	121,6
76	370	814	145	137,8
80	409	900	159	151,1
84	453	997	175	166,3
88	496	1.091	193	183,4
96	590	1.298	229	217,6

### SPECIFICATIONS

Specific gravity	1.14
Elongation at Break	15%-18%
Melting point	165°C(NIKA-Steel®)/265°C (PES)

### 12/24-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	Kilos /100m	Kilos /220m	Tons	Tons
40	102	224	44	41,8
44	124	273	52	49,4
48	147	323	60	57,0
52	172	378	70	66,5
56	200	440	81	77,0
60	230	506	91	86,5
64	262	576	103	97,9
68	296	651	116	110,2
72	331	728	128	121,6
76	370	814	145	137,8
80	409	900	159	151,1
84	453	997	175	166,3
88	496	1.091	193	183,4
96	590	1.298	229	217,6

# NIKA-Performance Steel



## For the “Coastal ventures”



Made of NIKA-Steel® and high tenacity polyester fibers in blue marine colors. High resistance against UV degradation. Soft eyes protected with special braided sleeve, manufactured in-house..

### BENEFITS

- Superior performance
- Abrasion resistance
- Floating
- Reduced operational cost due to extended service lifetime

- > Structural stability
- > High quality raw materials
- > Not affected by moisture

### CHARACTERISTICS

- Twist resistant construction, ideal for the frequent operations of coastal vessels, as well as tanker and container vessels.
- Excellent UV and chemical resistance.
- Manufactured according to EN ISO 10556.

12/24-STRANDS				
Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	79	174	35	33,3
44	96	211	41	39,0
48	115	253	48	45,6
52	136	299	55	52,3
56	156	342	63	59,9
60	180	396	71	67,5
64	208	458	80	76,0
68	234	515	90	85,5
72	260	572	100	95,0
76	290	638	114	108,3
80	321	706	125	118,8
84	352	774	136	129,2
88	383	842	148	140,6
96	464	1.020	175	166,3

SPECIFICATIONS	
Specific gravity	0.99 (Floating)
Elongation at Break	15%-18%
Melting point	165°C(NIKA-Steel®)/265°C (PES)



# Reduced Snap Back ropes - RSB



## IMPROVED Mixed NIKA-Steel®-RSB



Developed for maximum safety on-board due to the specified construction engineered for reduced snap-back reaction

### BENEFITS

- Floating
- Human-centered design for increased safety in mooring operations
- Extended service lifetime

- > Robust rope construction
- > High quality raw materials
- > Same strength in wet and dry conditions

### CHARACTERISTICS

- Tested and compliant to CI 1502 (Test Method for Reduced Recoil Risk Rope).
- Very good chemical resistance.



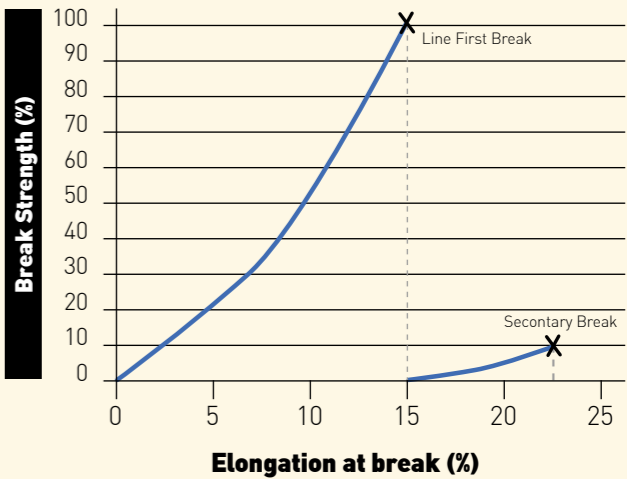
### 12-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	Kilos /100m	Kilos /220m	Tons	Tons
42	91	200	34	32,3
46	110	243	40	38,0
50	132	291	47	44,7
54	156	344	53	50,4
58	179	393	62	58,9
62	207	455	69	65,6
66	239	527	79	75,1
70	269	592	88	83,6
74	299	658	98	93,1
78	334	734	110	104,5
82	369	812	121	115,0
86	405	890	132	125,4
90	440	968	144	136,8
98	534	1.173	169	160,6

### SPECIFICATIONS

Specific gravity	0.99 (Floating)
Elongation at Break	15%
Melting point	165°C(NIKA-Steel®) / 265°C (PES) 165°C (RSB member)

### Break Strength / Elongation graph



The two-step partition of the rope is attributed to the RSB member that exhibits higher elongation and restraints the extreme

Maximum Safety in Mooring operations

# NIKA-Cord® 8 Strand

## The “Double-twisted” polyolefin rope



Made of Double twisted NIKA-Steel® yarns in 8-strand braided construction. Superior resistance to abrasion and cyclic loading fatigue resulting in very long service lifetime compared to commonly used polyolefin ropes.

**BENEFITS**

- Floating
- Very high abrasion and fatigue resistance
- Increased service life time compared to common polypropylene ropes
- Best value for money
- Easy handling

**SPECIFICATIONS**

Specific gravity: 0.91 (Floating)  
 Elongation at Break: 15%-18%  
 Melting point: 165°C(NIKA-Steel®) / 265°C (PES)

- > Ideal choice for polyolefin rope in mooring, anchoring and towing for bulk carriers, containers & passenger vessels
- > Suitable for mooring in areas of high UV sunlight exposure conditions
- > Same strength in wet and dry condition

**CHARACTERISTICS**

- Excellent endurance to cyclic loading.
- Manufactured according to latest edition of ISO 10572 standard and latest recommendations of OCIMF for the safe mooring of tanker vessels.
- Custom made colors.

8-STRANDS				
Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	72	158	27,9	26,5
44	88	194	33,3	31,6
48	104	229	39,2	37,2
52	122	268	45,7	43,4
56	142	312	52,4	49,8
60	163	359	59,4	56,4
64	185	407	67	63,7
68	210	462	75,3	71,5
72	234	515	83,6	79,4
76	262	576	92,5	87,9
80	290	638	101,5	96,4
84	320	704	111,4	105,8
88	351	772	121,3	115,2
96	416	915	142,7	135,6



# NIKA-Force 8 Strand

## The extra strong polyolefin rope



Made by the superior Nika-Steel® fibers, 8-strand rope construction. Very high tenacity and long service lifetime.

### BENEFITS

- Floating
- High strength efficiency
- Very easy splicing when needed
- Rotation resistant

### SPECIFICATIONS

**Specific gravity:** 0.91 (Floating)  
**Elongation at Break:** 15%-18%  
**Melting point:** 165°C(NIKA-Steel®)/265°C (PES)

- > Fit for mooring, anchoring and towing.
- > Same strength in wet and dry conditions
- > High quality raw materials

### CHARACTERISTICS

- Excellent UV and chemical resistance
- Manufactured according to latest edition of ISO 10572 standard and latest recommendations of OCIMF for the safe mooring of tanker vessels.

8-STRANDS				
Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	72	158	29	27,6
44	88	194	36	34,2
48	104	229	42	39,9
52	122	268	48	45,6
56	142	312	55	52,3
60	163	359	62	58,9
64	185	407	71	67,5
68	210	462	81	77,0
72	234	515	90	85,5
76	262	576	100	95,0
80	290	638	109	103,6
84	320	704	118	112,1
88	351	772	128	121,6
96	416	915	151	143,5



# NIKA-Polyester

## Made for Superior endurance



**Excellent tension-tension (cyclic loading) performance. Manufactured from 100% Polyester fibers of very high tenacity. Stabilized against UV degradation.**

### BENEFITS

- Very high abrasion resistance
  - Firm handling
  - Extended service lifetime
  - Easy to resplice when needed
- > Robust rope construction
  - > High quality raw materials
  - > Same strength in wet and dry conditions



### CHARACTERISTICS

- Intended for applications that require high resistance to abrasion.
- Very good chemical resistance.
- Manufactured in custom made colors and rope lengths according to ISO 1141.

### 8-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos/100m	Kilos/220m	Tons	Tons
40	121	266	36	34,2
44	141	310	42	39,9
48	175	385	52	49,4
52	196	431	59	56,1
56	238	524	71	67,5
60	262	576	77	73,2
64	310	682	92	87,4
68	344	757	102	96,9
72	378	832	109	103,6
76	422	928	120	114,0
80	466	1.025	135	128,3
84	512	1.126	148	140,6
88	559	1.230	160	152,0
96	670	1.474	195	185,3

### SPECIFICATIONS

Specific gravity	1.38
Elongation at Break	18%
Melting point	265°C

### 12/24-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos/100m	Kilos/220m	Tons	Tons
40	121	266	37	35,2
44	141	310	46	43,7
48	175	385	54,5	51,8
52	196	431	64	60,8
56	238	524	75	71,3
60	262	576	83	78,9
64	310	682	96	91,2
68	344	757	109,5	104,0
72	378	832	118	112,1
76	422	928	129	122,6
80	466	1.025	145	137,8
84	512	1.126	160	152,0
88	559	1.230	173,5	164,8
96	670	1.474	206	195,7

# NIKA-Nylon



## The “Elastic” rope for marine operations



The perfect choice for applications requiring high elongation properties during operation. Made of 100% high tenacity Polyamide (Nylon) material. Stabilized against UV degradation.

### BENEFITS

- Shock load absorbing properties
  - Easy to handle
  - Finest quality Nylon material
- > Robust rope construction  
> High quality raw materials  
> Same strength in wet and dry conditions



### CHARACTERISTICS

- Ideal type for mooring tails connected with wire ropes or high modulus ropes.
- Very good chemical resistance.
- Manufactured according to ISO 1140.

### 8-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	Kilos /100m	Kilos /220m	Tons	Tons
40	99	218	40	35,6
44	120	264	48	42,7
48	142	312	58	51,6
52	166	365	67,5	60,1
56	193	425	77	68,5
60	221	486	88,5	78,8
64	253	557	101	89,9
68	286	629	115	102,4
72	319	702	130	115,7
76	357	785	143,5	127,7
80	394	867	158,5	141,1
84	437	961	175	155,8
88	477	1.049	192	170,9
96	568	1.250	213	189,6

### SPECIFICATIONS

Specific gravity	1.14
Elongation at Break	25%-30%
Melting point	218°C

### 12/24-STRANDS

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	Kilos /100m	Kilos /220m	Tons	Tons
40	99	218	41	36,5
44	120	264	49	43,6
48	142	312	59	52,5
52	166	365	68,5	61,0
56	193	425	78,5	69,9
60	221	486	89	79,2
64	253	557	102	90,8
68	286	629	116	103,2
72	319	702	130,5	116,1
76	357	785	144	128,2
80	394	867	159,5	142,0
84	437	961	175,5	156,2
88	477	1.049	193	171,8
96	568	1.250	213,5	190,0



KATRADIS GROUP OF COMPANIES

## Double Braided Ropes

# Made for demanding operations

- Ideal for mooring lines installed on winches
- Designed for extended service life
- Core and Cover both active to the applied load

# NIKA Double Braided

## Efficient and Durable



### NIKA-Double Braided Polyester/NIKA- Steel®



Polyester sheath (jacket) covering a hollow braided NIKA-Steel® core rope.

#### BENEFITS

- Higher resistance against external abrasion compared to single braided ropes
- Rotation Resistant
- Excellent performance on winches
- Floating

- > Very good resistance against UV sunlight & chemicals
- > Very good performance during cyclic loading conditions
- > Not affected by moisture

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	94	207	33	31,4
44	113	249	38	36,1
48	135	297	46	43,7
52	158	348	53	50,4
56	180	396	62	58,9
60	212	466	69	65,6
64	244	537	80	76,0
68	275	605	91	86,5
72	304	669	101	96,0
76	340	748	112	106,4
80	376	827	123	116,9
84	416	915	138	131,1
88	454	999	151	143,5
96	533	1.173	172	163,4

#### SPECIFICATIONS

Specific gravity	0.99 (Floating)
Elongation at Break	15% - 18%
Melting point	165°C (NIKA-Steel®) / 265°C (PES)

### NIKA-Double Braided 100% Polyester



High Tenacity Polyester material (marine grade) both in core and cover construction.

#### BENEFITS

- Very high service life
- Excellent abrasion resistance
- Torque free
- Effective bending when spooling on winch drums and when passing through fairleads

- > UV stabilized rope construction
- > Excellent resistance to tension-tension fatigue
- > Ultimate endurance in mooring operations

Size (Diam)	Weight (+/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
mm	Kilos /100m	Kilos /220m	Tons	Tons
40	122	268	38	36,1
44	147	323	46	43,7
48	176	387	55	52,3
52	205	451	66	62,7
56	238	524	76	72,2
60	274	603	87	82,7
64	312	686	100	95,0
68	355	781	114z	108,3
72	395	869	126	119,7
76	439	966	141	134,0
80	487	1.071	158	150,1
84	538	1.184	174	165,3
88	591	1.300	189	179,6
96	702	1.544	226	214,7

#### SPECIFICATIONS

Specific gravity	1.38
Elongation at Break	18%
Melting point	265°C

## NIKA-Double Braided 100% Nylon



Finest quality Polyamide material (100% Nylon) exhibiting very high elongation. Double braided construction for excellent resistance to external abrasion.

**BENEFITS**

- Flexible in handling
  - Rotation Resistant
  - Shock load absorbing properties
- > Ideal choice for applications requiring high elongation properties
- > Very good resistance to cyclic loading
- > When wet, there is expected strength loss of approximately 10% which is recovered once dry again

Size (Diam)	Weight ( +/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	mm	Kilos /100m Kilos /220m		
40	99	218	40	35,6
44	120	264	47	41,8
48	143	315	58	51,6
52	168	370	69	61,4
56	195	429	79	70,3
60	223	491	91	81,0
64	254	559	104	92,6
68	286	629	117	104,1
72	321	706	131	116,6
76	358	788	148	131,7
80	397	873	163	145,1
84	438	964	178	158,4
88	481	1.058	194	172,7
96	572	1.258	236	210,0

SPECIFICATIONS	
Specific gravity	1.14
Elongation at Break	25%-30%
Melting point	218°C

## NIKA-MultiForce



Supreme winchline for effective mooring. High abrasion resistant sheath covering a hollow braided NIKA-Steel® core rope. UV stabilized materials for resistance against degradation due to sunlight.

**BENEFITS**

- Floating
  - Rotation Resistant
  - Easy warping on winchdrums
- > Excellent resistance to abrasion, sunlight & chemicals
- > Good resistance to cyclic loading
- > Equal strength in wet and dry conditions

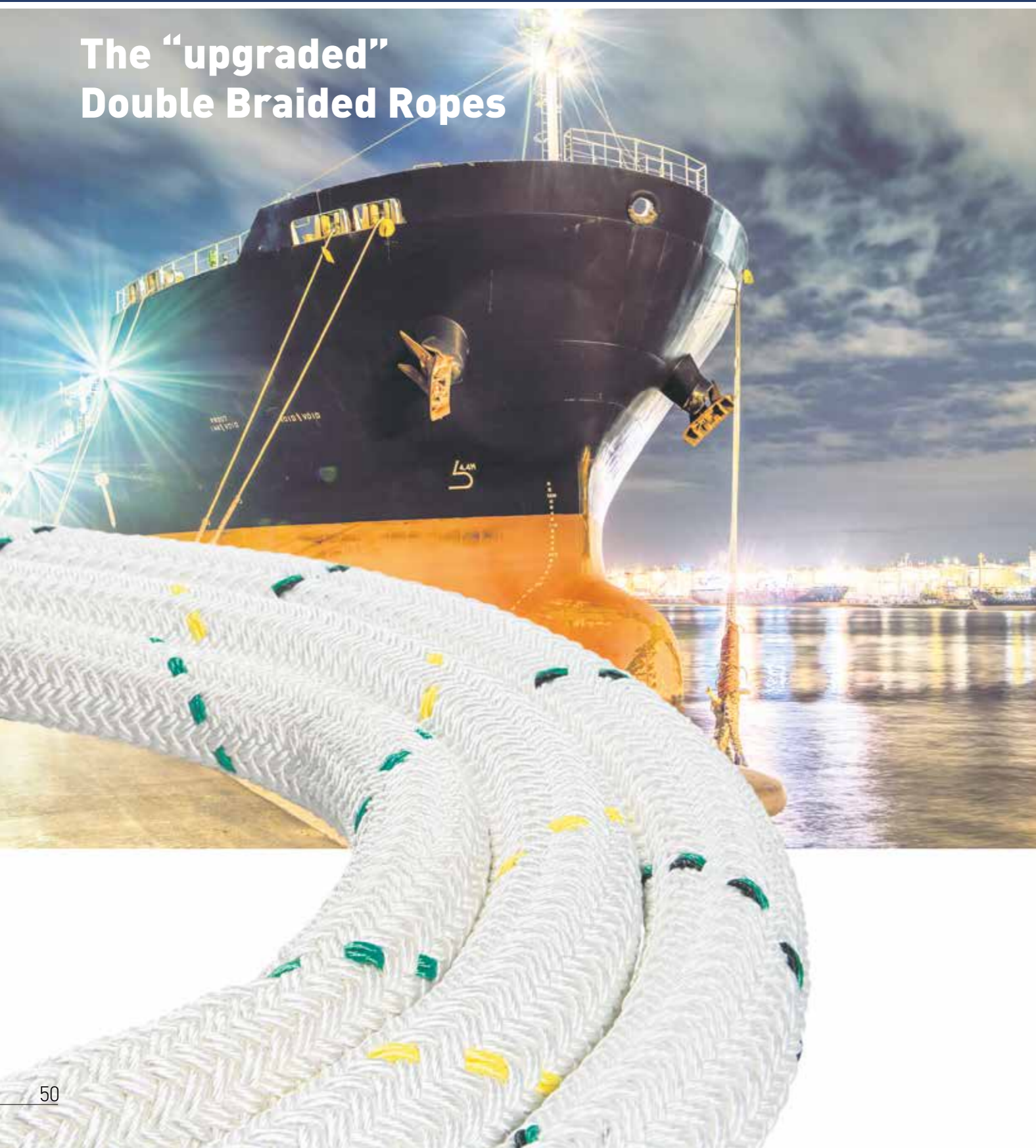
Size (Diam)	Weight ( +/- 5%)		MBL (ISO 2307)	LDBF (MEG4)
	mm	Kilos /100m Kilos /220m		
40	75,5	166	30	28,5
44	93,5	205,5	37	35,2
48	110	242	43	40,9
52	128,5	283	50	47,5
56	149	327,5	57	54,2
60	172,5	379,5	64	60,8
64	194	427	73	69,4
68	221	486	84	79,8
72	247	543	93	88,4
76	275	605	104	98,8
80	304,5	670	115	109,3
84	336	739	123	116,9
88	368,5	810,5	134	127,3
96	437	961	157	149,2

SPECIFICATIONS	
Specific gravity	0.91
Elongation at Break	16%
Melting point	165°C



# DualForce Ropes

## The “upgraded” Double Braided Ropes



### NIKA-DualForce Mixed



Double braided construction manufactured from NIKA-Steel® core rope, overbraided with a robust cover of mixed NIKA-Steel® / Polyester material.

#### BENEFITS

- Floating
- Very long service lifetime
- Ideal for installation on mooring winches

- > Easy to handle, rotation resistant
- > Very good performance during cyclic loading conditions
- > Not affected by moisture

### NIKA-DualForce Polyester



Industrial grade Polyester (100%) material. Double braided construction of enhanced endurance against external and internal abrasion.

#### BENEFITS

- Flexible
- Torque free
- Easy to operate on winchdrums and fairleads

- > Fit for mooring, anchoring and tails
- > Optimal resistance against tension-tension fatigue
- > Not affected by moisture

### NIKA-DualForce Nylon



High Tenacity Polyamide material (100% Nylon), with the most effective ability to absorb dynamic loads.

#### BENEFITS

- Flexible in handling
- The highest elongation properties
- Finest quality of Polyamide raw material

- > Twist resistant
- > UV stabilized material
- > Can be used as mooring tail connected with wire ropes or high modulus ropes

	NIKA DUALFORCE MIXED				NIKA DUALFORCE POLYESTER				NIKA DUALFORCE NYLON			
Diam	Weight (+/- 5%)		MBL	LDBF	Weight (+/- 5%)		MBL	LDBF	Weight (+/- 5%)		MBL	LDBF
mm	Kilos/100m	Kilos/220m	Tons	Tons	Kilos/100m	Kilos/220m	Tons	Tons	Kilos/100m	Kilos/220m	Tons	Tons
40	88	194	34	32,3	122	268	39,5	37,5	99	218	42	37,4
44	106	233	39	37,1	147	323	47	44,7	120	264	49	43,6
48	125	275	48	45,6	176	387	57	54,2	143	315	60	53,4
52	148	325	55	52,3	205	451	68	64,6	168	370	71	63,2
56	169	372	64	60,8	238	524	79	75,1	195	429	81	72,1
60	200	440	71	67,5	274	603	89	84,6	223	491	94	83,7
64	228	502	83	78,9	312	686	104	98,8	254	559	108	96,1
68	257	565	94	89,3	355	781	116	110,2	286	629	120	106,8
72	285	627	103	97,9	395	869	129	122,6	321	706	135	120,2
76	319	701	116	110,2	439	966	145	137,8	358	788	153	136,2
80	353	775	128	121,6	487	1.071	163	154,9	397	879	166	147,7
84	390	858	145	137,8	538	1.184	178	169,1	438	964	183	162,9
88	425	935	157	149,2	591	1.300	195	185,3	481	1.058	198	176,2
96	501	1.102	180	171,0	702	1.544	229	217,6	572	1.258	240	213,6

SPECIFICATIONS		SPECIFICATIONS		SPECIFICATIONS	
Specific gravity	0.99 (Floating)	Specific gravity	1.38	Specific gravity	1.14
Elongation at Break	15% - 18%	Elongation at Break	18%	Elongation at Break	25% - 30%
Melting point	165°C (NIKASteel®) / 265°C (PES)	Melting point	265°C	Melting point	218°C



# Specifications of fibers

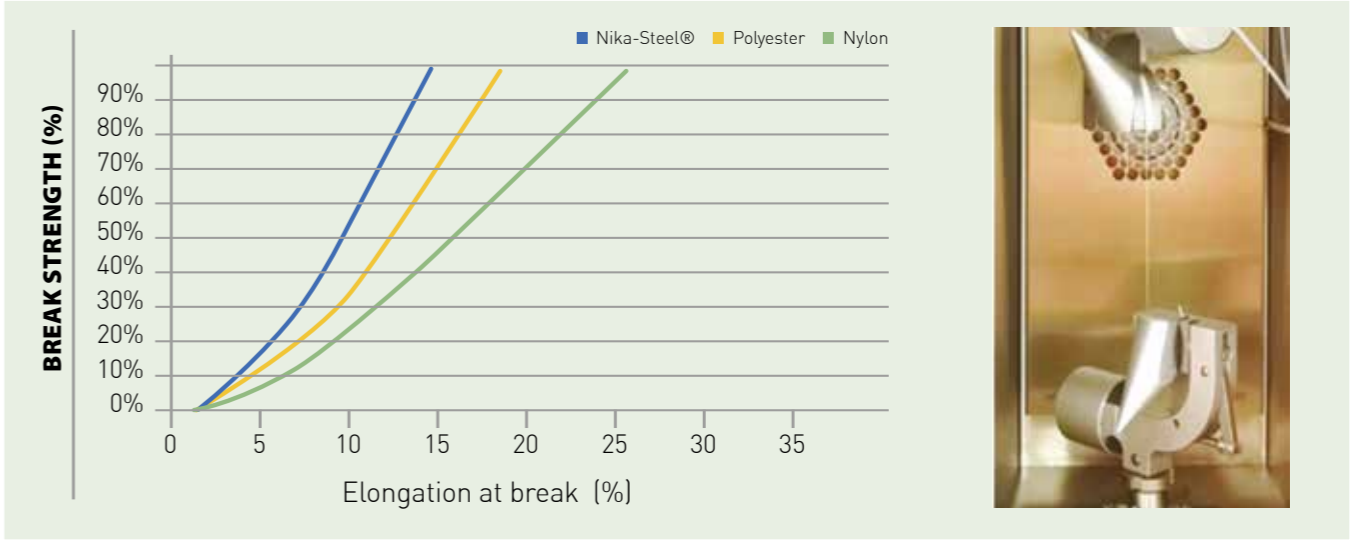
## Technical specifications of fibers

BASIC CHARACTERISTICS							
Material	Specific Gravity	Melting point (°C)	Fiber Tenacity (gr/den)	Elongationat break (%)	Abrasion Resistance (0-10)	Water absorption (%)	UV Resistance (0-10)
Polyolefin (NIKA-Steel)	0,91	165	7,7	15	6	0,1	10
Polyester	1,38	265	9,3	18	8	0,1	8
Polyamide	1,14	218	9,3	25	7	3-5	8
Common Polypropylene / Polyolefin	0,91	165	6,5	15	4	0,1	4

The greener colour indicates beneficial property

## Break Strength / Elongation graph

The elongation characteristics is a very important factor when selecting a rope material. Ship movements are often calculated before berthing and the excursion is dependent to the rope elongation.



# The protection

## For your mooring line



# NIKA® Protector

## Extra Protective sleeves for abrasion resistance



### NIKA® Guard

#### The vital protection for your rope

An excellent cost-effective option to protect your ropes! Nika® Guard is a Flat Polyester webbing pad. The Velcro® scratch tape, firmly stitched on the sleeve guard, is used for quick & easy installation and removal. Colours: blue or orange.

Length: 2m

#### FEATURES:

- Fixed or adjustable for easy positioning
- Extends significantly the service life of synthetic ropes
- Abrasion resistant
- Light and flexible



### NIKA® Guard UltraDouble

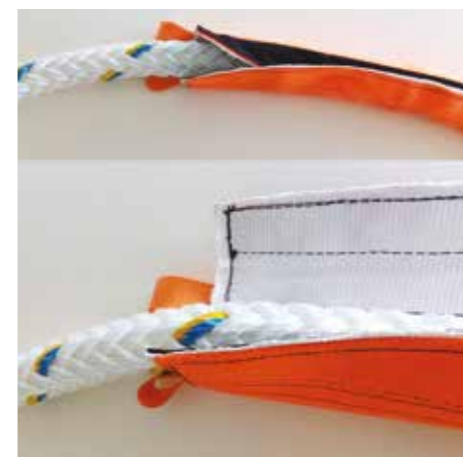
#### The special Double-layered webbing for chafe protection

Developed for excellent performance and protection of synthetic mooring lines against abrasion conditions during mooring operations. It is manufactured using a combination of High Tenacity polyester and UHMWPE webs in a double-layer sleeve construction. The polyester layer of the webbing sleeve is fixed on the outer side while the UHMWPE layer protects the rope from the inside

Length 2,5 m

#### FEATURES:

- Fixed or adjustable for easy positioning
- Smooth surface protection upon the mooring line
- Abrasion and cut resistance
- Easy attached on the line using Velcro scratch tape



### NIKA® Protector

#### High performance protection for your mooring line

Nika® protectors are manufactured by using UHMWPE fibers which are coated with Nika® Lube for superior abrasion resistance. Nika® Protectors are also coated externally with Nika® Thane, in order to improve protector-to-chock gripping performance and in order to reduce sliding.

Length 2,5 m

#### FEATURES:

- Fixed or adjustable for easy positioning
- Extends significantly the service life of synthetic High Modulus Ropes
- Superior abrasion and cut resistance
- Extremely thick layer of protection
- Very light



### Chafe-Pro® HB

#### The ideal protection

The Chafe-Pro® HB is constructed of multiple layers of FJORD, Inc.'s specially formulated and designed heavy-duty nylon weaves. Abrasion testing has shown the Chafe-Pro® HB to be more resistant to chafe abrasion than marine-grade fire hose. The Chafe-Pro® HB is available in standard lengths.

Colour: black.

#### FEATURES:

- Fixed or adjustable for easy positioning
- Extends significantly the service life of synthetics ropes
- Excellent abrasion resistance
- Light and flexible



# Abrasion

The major enemy of mooring ropes



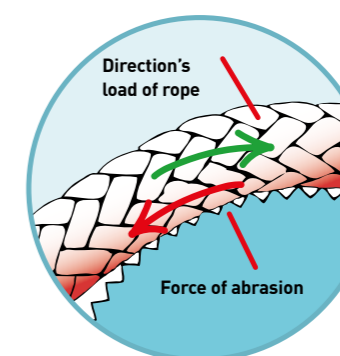
Ropes are affected by two types of abrasion: **external abrasion which is produced by contact with rough surfaces and internal abrasion which is caused by the friction between external and internal fibers. A rope without protection will be affected by mostly external abrasion when coming into contact with a rough or rusty surface, for example chocks, bitts etc.**

Signs of external abrasion will be evident not only externally on the rope yarns, but also on the surface that contacted the rope. The same rough surfaces can also cause internal abrasion due to the movement of the internal strands relative to each other. When the rope's surface strands pass over rough surfaces, exhibit different elongation characteristics comparing to the subsurface ones which lead to relatively internal movement and friction heat generation. Yet, excessive heat can lead to unexpected yarn/strand failures.

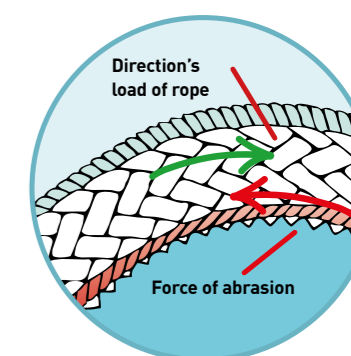


Unfixable damages on ropes of various manufacturers caused by the lack of the proper protection from abrasion.

WITHOUT CHAFE PROTECTION



WITH CHAFE PROTECTION



**All of KATRADIS mooring ropes, are supplied with tailor made chafe protective sleeves in both of the eye-lets, while there are several available options of rope body protectors for application on the chock-mooring rope contact area.**





# Mooring Tails

**The best suitable quality based  
on your requirements**

# Mooring Tails

Which mooring tails are appropriate for your application?

**Get in touch with our experts who will help you select the best suitable mooring tails based on your requirements. The basic considerations when selecting a specific material, construction, length and size of mooring tail are the following:**

## **The desired elasticity**

NIKA-Nylon mooring tails exhibit the highest elongation properties amongst synthetic marine ropes, which makes this tail type ideal for reducing the dynamic loads that are introduced during mooring operations. NIKA-Nylon tails of 22m length are recommended for operations at exposed terminals where shock loads are more frequent.

Medium to high elasticity is expected by other types of mooring tails (Mixed Polyester/ Nikasteel® and 100% Polyester respectively).

## **Floating or Non- floating**

IMPROVED Mixed Nikasteel® tails are floating in seawater and are highly recommended for towing operations (use in tugboats).

NIKA-Polyester, NIKA-Nylon and NIKA-Flex tails are non-floating.

## **The type of mooring berth (s)**

For open berths we recommend 22m length tails made from Nylon for better cyclic loading response of the mooring lines which can result in increased service life.

In sheltered ports, 11m length tails are the most commonly used, however 22m length tails can also be an alternative.

As per MEG4 (Mooring Equipment Guidelines, 4th edition, OCIMF), mooring tails should have TDBF (Tail Design Break Force, wet condition) that is 25%-30% higher than the MBLSD ship (design MBL).

The ease of handling and the potential need for re-splicing.

The construction of 8-Strand braided Tails is easier & faster to re-splice.

Floating tails (such as IMPROVED Mixed NIKA-Steel® tails) are lighter and are considered easier to handle due to lower weight (35% – 40% lighter when compared with 100% Polyester tails).

**There are two basic types of Mooring tails. The single leg and the grommet type:**

## **Single leg**

Single leg tails are the most common type of tails used in a variety of applications (mooring, towing etc.) This construction has standard two soft eyes, one of 1,8m (6 feet) length and the other of 0,9m (3 feet) length. Standard lengths for tankers, LNG and LPG vessels are 11m and 22m but any length can be produced according to client requirements.



## **Grommet Type**

Grommet type tails are used in special applications requiring high strengths. They have standard two soft eyes, one of 1,8m (6 feet) length and the other of 0,9m (3 feet) length. The eyes are formed by lashings (seizing the two rope bodies together to form an eye). The strength of a Grommet mooring tail is 1,6 times the strength of a single leg (of the same material, construction and size) and its length depends on the customer's special requirements.



# Single Leg Mooring Tails

## NIKA-NYLON



NIKA-Nylon tails exhibit excellent dynamic load and shock absorption properties. 22m Nylon Mooring tails are ideal in exposed berths/ terminals.



Diam	MBL 8strand	TDBF 8strand	MBL 12/24strand	TDBF 12/24strand
mm	Tons	Tons	Tons	Tons
68	115	97,75	116	103,2
72	130	110,5	130	115,7
76	143	121,55	144	128,2
80	158	134,3	159	141,5
84	175	148,75	175	155,8
88	192	163,2	193	171,8
96	213	181,05	213	189,6
104	240	204	241	214,5

Specific gravity	1,14
Melting point:	218°C
Elongation at breaking:	25-30%
Fiber water absorption	3-5%
Chemical resistance	Very Good

## NIKA-POLYESTER



NIKA-Polyester tails are fit for applications where abrasion resistance is needed. Made of high-Tenacity marine grade Polyester fibers.

Diam	MBL 8strand	TDBF 8strand	MBL 12/24strand	TDBF 12/24strand
mm	Tons	Tons	Tons	Tons
68	102	91,8	109,5	104,0
72	109	98,1	118	112,1
76	120	108	129	122,6
80	135	121,5	145	137,8
84	148	133,2	160	152,0
88	160	144	173,5	164,8
96	195	175,5	206	195,7
104	215	193,5	217	206,2

Specific gravity	1,38
Melting point:	265°C
Elongation at breaking:	18%
Fiber water absorption	0,1%
Chemical resistance	Very Good

## IMPROVED Mixed NIKA-Steel®



Improved NIKA-Steel® tails are produced from mixed Polyester/NIKA-Steel® yarns in a special proportion that ensures excellent strength and abrasion resistance.



Diam	MBL 8strand	TDBF 8strand	MBL 12/24strand	TDBF 12/24strand
mm	Tons	Tons	Tons	Tons
68	86	77,4	88	83,6
72	96	86,4	98	93,1
76	108	97,2	110	104,5
80	120	108	121	115,0
84	129	116,1	132	125,4
88	137	123,3	144	136,8
96	161	144,9	169	160,6
104	186	167,4	196	186,2

Specific gravity	0,99
Melting point:	165°C NIKA-Steel® / 265°C Polyester
Elongation at breaking:	15-18%
Fiber water absorption	0,1 %
Chemical resistance	Very Good

## NIKA-Flex Steel



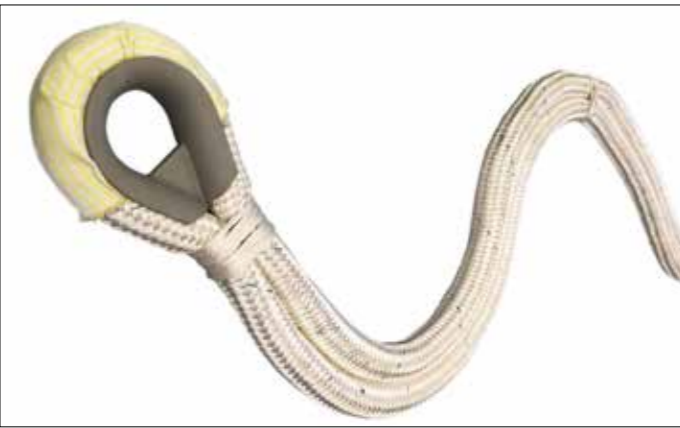
NIKA-Flex tails are specially engineered for demanding applications where high strength and excellent abrasion resistance are a must.

Diam	MBL 8strand	TDBF 8strand	MBL 12/24strand	TDBF 12/24strand
mm	Tons	Tons	Tons	Tons
68	116	104,4	116	110,2
72	128	115,2	128	121,6
76	145	130,5	145	137,8
80	159	143,1	159	151,1
84	175	157,5	175	166,3
88	193	173,7	193	183,4
96	229	206,1	229	217,6
104	262	235,8	262	248,9

Specific gravity	1,14
Melting point:	165°C NIKA-Steel® / 265°C Polyester
Elongation at breaking:	15-18%
Fiber water absorption	0,1 %
Chemical resistance	Very Good

# Grommet Type Mooring Tails

Mooring tails of grommet construction offer very high strength and meet the requirements of the most demanding applications. With a variety of fiber materials, the user can select the desired properties such as floatability, high elongation properties etc. that best suit specific operations.



The Gromet type tail is manufactured out of three production choises (nylon, polyester, Mixed)

	GROMMET NYLON DB		GROMMET POLYESTER DB		GROMMET MIXED DB	
Diam	MBL	TDBF	MBL	TDBF	MBL	TDBF
mm	Tons	Tons	Tons	Tons	Tons	Tons
68	187,2	166,6	182,4	173,3	145,6	138,3
72	209,6	186,5	201,6	191,5	161,6	153,5
76	236,8	210,8	225,6	214,3	179,2	170,2
80	260,8	232,1	252,8	240,2	196,8	187,0
84	284,8	253,5	278,4	264,5	220,8	209,8
88	310,4	276,3	302,4	287,3	241,6	229,5
96	377,6	336,1	361,6	343,5	275,2	261,4
104	436,8	388,8	420,8	399,8	336	319,2

SPECIFICATIONS		SPECIFICATIONS		SPECIFICATIONS	
Specific gravity	1,14	Specific gravity	1,38	Specific gravity	0,99
Melting point	218°C	Melting point	265°C	Melting poin	165°C NIKA-Steel® / 265°C Polyester
Elongation at breaking	25-30%	Elongation at breaking	18%	Elongation at breaking	15-18%
Fiber water absorption	3-5%	Fiber water absorption	0,1 %	Fiber water absorption	0,1 %
Chemical resistance	Very Good	Very Good	Very Good	Chemical resistance	Very Good



# Eye Protection



**Polyester Eye**  
Special braided polyester sleeves

Polyester Eye Splice Protector is a special braided cover designed for extra protection of the eye splices. In demanding applications, the Polyester Eye Splice Protector will satisfy every end-user with its endurance. Polyester Eye Splice Protector is made from specially twisted polyester fibers. The application of Nika® Thane-P coating reduces both internal and external friction and offers excellent protection.

**FEATURES:**

- Excellent abrasion resistance • UV resistance • Flexible
- Excellent choice for tails



**Thor® Guard**  
The «divine» protector for your mooring line

Thor® Guard is a one-piece unit that encloses both the splice and the eye of the line. It offers a continuous layer of abrasion resistant material without a break in protection at the transition from the eye to the splice.

The standard stock Thor® Guard is designed for lines 26mm–45 mm in diameter, with eye and having a mooring tail extending 2,13 m from the throat of the splice. Its design features handles on the eye of the Thor® Guard to assist in handling the line.

**FEATURES:**

- Encloses both the splice and the eye of the line • Excellent abrasion resistance • Light and flexible • Excellent choice for mooring lines



**Nika® Eye**  
The Maximum protection for cow-hitch

Nika® Eye Splice Protector is a specially braided cover designed for maximum protection of the eye splices. Nika® Eye Splice Protector is made from specially twisted UHMWPE fibers, which is the perfect choice for cow-hitch connections as it offers maximum protection without reducing the strength of the mooring line. It is also an excellent protection for connections that include mooring link.

**FEATURES:**

- Maximum protection from internal and external abrasion • Excellent efficiency in cow-hitch connections • Perfect choice for tails & mooring lines

# Mooring Connection

Connecting the mooring tails with the main high modulus line or wire requires attention to detail and effective equipment in order to ensure that 100% of the rope performance is achieved. Below there are given two most applicable types of line-tail connection.



**Cow-Hitch**

Approved by MEG4 (OCIMF). Field experience and extensive in-house testing has shown zero impact on the mooring line's strength with this type of connection, if prepared with special NIKA-Eye Protection.

**FEATURES:**

- Floating mooring line when used with a floating tail • Reduced cost • Very easy to handle • Light and flexible • By using Nika Eye protection we avoid the reduction of the mooring line's strength



**Link Mandal or Tonsberg**

A standard practice when connecting the mooring tail with a wire-rope or mooring ropes.


**FEATURES:**

- Robust connection • Used without reduction of mooring line strength

### Retirement criteria of mooring tails

It is recommended as per MEG4 to retire mooring tails when the TDBF is reduced to 75% of the ship design MLB (MLBSD), unless inspection calls for earlier retirement. For more information consult the User's Manual for Synthetic Mooring Tails (provided by KATRADIS SA).

### Mooring Line Stopper



**NIKA-Force Stopper 3str**

A mooring line stopper is used to maintain the tension of the secondary mooring line while the crew removes the line from the capstan and positions the secondary line around the bitts.

A mooring line stopper should be of the same type of synthetic fiber material as the material of the mooring line.

Diam	MBL
mm	Tons
18	5,13
20	6,32
22	7,64
24	9,11
26	10,68
28	12,33
30	14,24
32	16,18
34	18,28
36	20,3
38	22,44
40	24,46

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