

# KAYAROPES

[KAYAROPES.COM](http://KAYAROPES.COM)

2016/ENG

COMMERCIAL  
MARINE ROPES





FSC  
SGSCOC007953



KAYAROPES.COM



## **KAYA COMPANIES;**

A LEADER IN ITS FIELD TODAY, THE KAYA GROUP BEGAN BUSINESS IN THE 1980'S AS KAYA CONSTRUCTION. NOW PREPARING TO CELEBRATE ITS 30TH YEAR OF OPERATION, THE KAYA GROUP CONCENTRATES ITS KNOWLEDGE AND EXPERIENCE IN FOUR MAIN AREAS OF ACTIVITY: TECHNICAL ROPES, INDUSTRIAL WORK SAFETY AND WORK AT HEIGHT, WORK HEALTH AND SAFETY TRAINING AND CONSULTING SERVICES. FULLY AWARE OF THE DIMENSION OF SOCIAL RESPONSIBILITY ATTACHED TO THE SECTOR, THE COMPANY OBTAINS NATIONAL AND INTERNATIONAL CERTIFICATES FOR ALL PRODUCTS IT DEVELOPS AND MANUFACTURES. THROUGH PROVIDING EDUCATION AND CONSULTATION SERVICES CONCERNING THE CORRECT USE OF ITS PRODUCTS, THE KAYA GROUP HAS GAINED THE KNOWLEDGE, EXPERIENCE AND LEVEL OF COMPETENCE THAT HAVE GIVEN THE COMPANY THE CONFIDENCE AND RESOURCES TO BE ABLE TO MAKE NEW ADVANCES FROM A SOUND BASE. WITH ITS 30 YEARS OF EXPERIENCE, THE KAYA GROUP IS THE LARGEST ORGANIZATION IN THE SECTOR. IN 2010, WITH NEW PRODUCTS, SERVICES AND INVESTMENTS, THE COMPANY IS FIRMLY ON THE PATH TOWARDS BECOMING AN IMPORTANT BRAND IN THE INTERNATIONAL MARKET.

## **OUR VISION;**

TO MAKE KAYA THE UNDISPUTED WORLD'S STRONGEST, MOST PRESTIGIOUS AND TRUSTED BRAND IN ITS SECTOR.

## **MISSION STATEMENT;**

OUR MISSION IS TO CONDUCT RESEARCH AND DEVELOPMENT BASED ON ACCURATE ANALYSIS OF NEEDS IN THE SECTOR AND THEREBY DEVELOP NEW PRODUCTS; TO EMPLOY MODERN MACHINERY AND A COMPETENT WORKFORCE IN THE MANUFACTURE OF WORLD-CLASS, HIGH QUALITY GOODS; TO PROVIDE TRAINING AND CONSULTING SERVICES TO CREATE KNOWLEDGEABLE WORKERS AND MANAGERS AND HELP ESTABLISH A CULTURE OF WORK SAFETY IN TURKEY; AND TO PROVIDE COMPLETE SOLUTIONS VIA OUR INTEGRATED SERVICES.

## **COMPANY PHILOSOPHY;**

BASED ON THE VALUE WE PLACE ON HUMAN LIFE, OUR GOAL IS TO DESIGN PRODUCTS THAT WILL SAFEGUARD HUMAN LIFE ON THE JOB, TO MANUFACTURE SUCH PRODUCTS, AND TO RAISE AWARENESS ABOUT WORK SAFETY BY TRAINING WORKERS AND MANAGERS AND PROVIDING CONSULTATION SERVICES IN THIS REGARD.



# CONTENTS

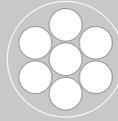
KAYA COMPANIES .....	1
ROPE CONSTRUCTIONS .....	4
OUR MATERIALS .....	6
OUR TREATMENTS .....	7
REVIEW OF PRODUCTS AND APPLICATIONS .....	8
<b>ALL PRODUCTS .....</b>	<b>12</b>
HIGH PERFORMANCE ROPES .....	12
CONVENTIONAL ROPES .....	18
PENDANTS .....	40
SHOCK LINES .....	44
PROTECTIVE SLEEVES .....	46
WIRE ROPES .....	48
HARDWARE & SOFT SHACKLES .....	52
SLINGS .....	56
<b>TECHNICAL APPENDIX .....</b>	<b>59</b>
FIBER FACTS .....	60
USERS' MANUAL .....	62
FORMULAE .....	63
WIRE ROPE GENERAL INFORMATION .....	64
WIRE ROPE CARE – LUBRICATION .....	65
STANDARDS .....	66
QUALITY-TEST .....	67
PARTNERS .....	68

## ROPE CONSTRUCTIONS

### LAIID ROPES



3 STRAND



6 STRAND

### PLAITED ROPE

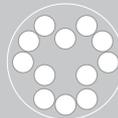


8 STRAND (SQUARE)

### 12 STRAND BRAIDED ROPES

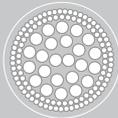


12 STRAND



12 STRAND (ROUND)

### DOUBLE BRAIDED ROPES



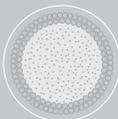
DOUBLE BRAIDED (16 - 20 - 24 - 32 - 36 - 40 - 48)

### SOLID BRAIDED ROPE



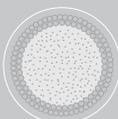
SOLID BRAIDED

### PARALLEL STRAND ROPE

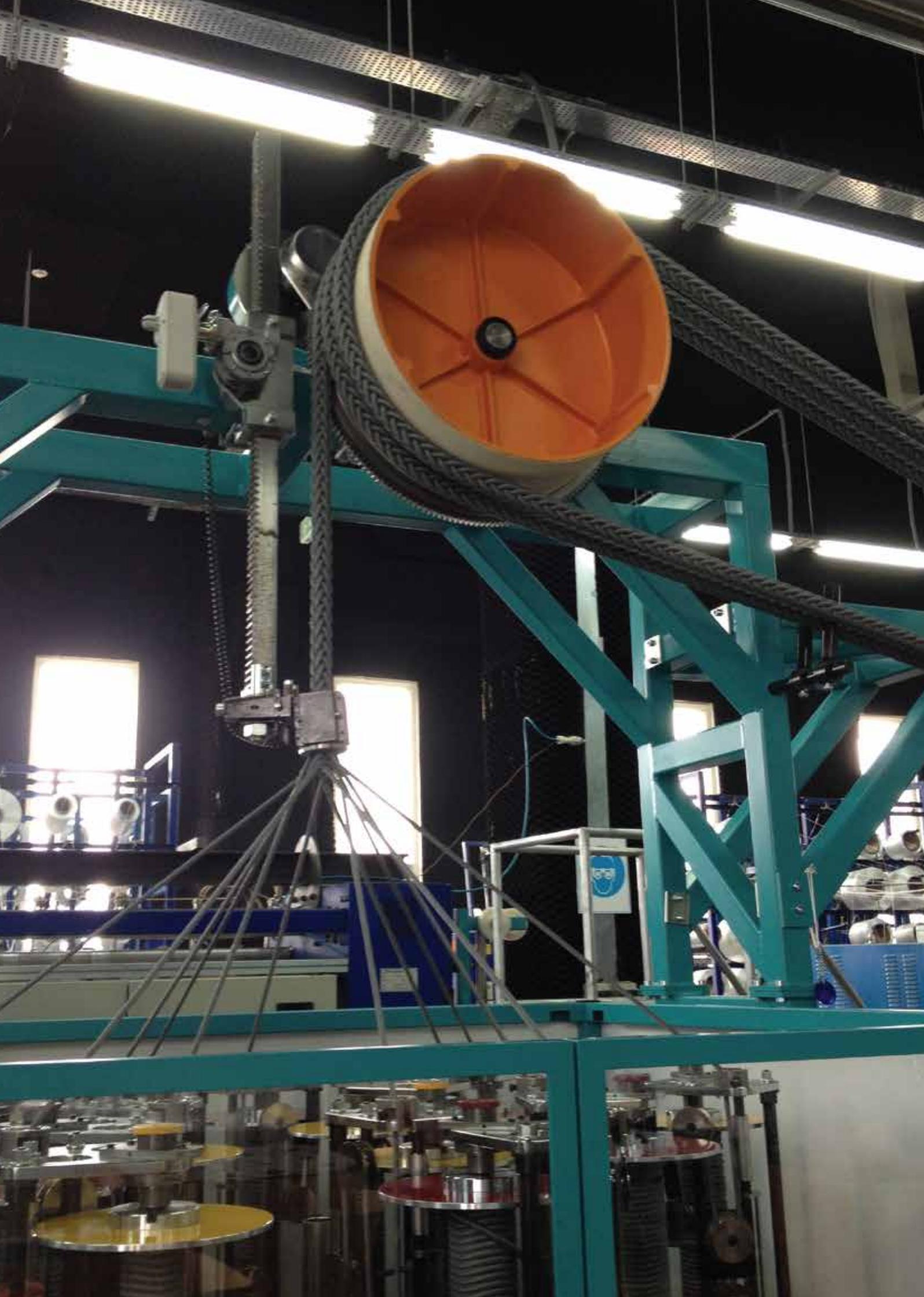


PARALLEL STRAND

### KERNMANTEL ROPE



KERNMANTEL



## OUR MATERIALS

### DYNEEMA® FIBER



DYNEEMA® IS A REGISTERED TRADEMARK OF ROYAL DSM N.V.

DYNEEMA® IS AN UHMWPE FIBER. DSM INVENTED DYNEEMA® MORE THAN 30 YEARS AGO AND IT HAS BEEN IN PRODUCTION SINCE 1990. THE FIBER IS INCREDIBLY VERSATILE WITH VIRTUALLY LIMITLESS APPLICATIONS. THE FIBER IS MANUFACTURED BY MEANS OF A GEL-SPINNING PROCESS THAT COMBINES EXTREME STRENGTH WITH INCREDIBLE SOFTNESS. DYNEEMA® IS A SUPER-STRONG FIBER BASED ON UHMWPE. IT OFFERS MAXIMUM STRENGTH COMBINED WITH MINIMUM WEIGHT.

DYNEEMA® SK75 IS AN EXTREMELY HIGH-STRENGTH, LOW-STRETCH FIBER.

DYNEEMA® SK78 FIBER FROM DSM DYNEEMA® PROVED ITS SUPERIOR PERFORMANCE UNDER EXTREME CONDITIONS. THE HIGH MODULUS FIBER, SK78 HAS A BETTER STABILITY UNDER CONSTANT LOADS, IMPROVED CREEP FEATURE THAN ITS PROTOTYPE.

DYNEEMA® SK90 IS ONE OF THE MOST ADVANCED HIGH-TECH FIBERS WITH 12-13% GREATER STRENGTH, HAS SAME CREEP FEATURE AS SK-75 FIBER. IT IS A PERFECT FIBER FOR EXTREME SAILORS WHO ARE IN SEARCH OF OUTSTANDING PERFORMANCE.

DYNEEMA® SK99 IS THE NEWEST FIBER IN DYNEEMA'S SK RANGE – 99 SAILING INSPIRATIONS WITH DYNEEMA® SPOTLIGHTS AND SHARES THE MANY WAYS THE WORLD'S STRONGEST FIBER IS EXTENDING PERFORMANCE AND GIVING PROFESSIONAL AND RECREATIONAL SAILORS A WINNING, AND SAFETY, EDGE. SK99 HAS NEARLY 20% HIGHER STRENGTH THAN SK78 AND KEEPS THE SAME ELONGATION AND CREEP FEATURES AS SK75.

### TECHNORA® FIBER



The power of Aramid

TECHNORA® IS A REGISTERED TRADEMARK OF TEIJIN ARAMID B.V.

TECHNORA® IS A PARA-ARAMID FIBER MADE FROM CO-POLYMERS AND PRODUCED FROM POLY-PARAPHENYLENE TEREPHTHALAMIDE (PPTA). IT WAS INDEPENDENTLY DEVELOPED BY TEIJIN AND HAS BEEN COMMERCIALY AVAILABLE SINCE 1987. THIS HIGH PERFORMANCE FIBER HAS A RANGE OF EXCELLENT PROPERTIES, INCLUDING HIGH TENSILE STRENGTH, GOOD FATIGUE RESISTANCE, LONG-TERM DIMENSIONAL STABILITY AND GOOD RESISTANCE TO CORROSION, HEAT, CHEMICALS AND SALTWATER.

### VECTRAN® FIBER



VECTRAN® IS A REGISTERED TRADEMARK OF KURURAY CO.LTD

VECTRAN® IS A HIGH-PERFORMANCE MULTIFILAMENT YARN SPUN FROM LIQUID CRYSTAL POLYMER (LCP) PRODUCED BY KURURAY IN JAPAN. VECTRAN® IS CURRENTLY THE ONLY MELT SPUN LCP FIBER IN THE WORLD THAT IS COMMERCIALY AVAILABLE. THE UNIQUE COMBINATION OF CHARACTERISTICS OF VECTRAN® FIBERS MAKE IT SUPERIOR TO MANY OTHER MATERIALS AND ENABLE IT TO PERFORM UNDER CONDITIONS IN WHICH OTHER MATERIALS FAIL.

### KEVLAR® FIBER



DUPONT™ AND KEVLAR® ARE REGISTERED TRADEMARKS OF E. I. DU PONT DE NEMOURS AND COMPANY

IN THE 1960S DUPONT™ DEVELOPED KEVLAR® IN RESPONSE TO THE LIMITED BREAK STRENGTH AND INITIAL MODULUS OF THE, AT THAT TIME, LEADING MAN-MADE FIBERS, NYLON AND POLYESTER. DUPONT™ SUCCEEDED IN CREATING AN INNOVATIVE POLYMER CHAIN EXTENSION METHOD WHICH CAN BE CONSIDERED THE CORNERSTONE OF THE CURRENT FORMULATION. DUPONT™ KEVLAR® IS A SO-CALLED PARA-ARAMID FIBER. ITS PROPERTIES MAKE IT SUITABLE FOR THE MOST DIFFICULT AND DEMANDING APPLICATIONS IN SEVERAL INDUSTRIES. IT COMBINES HIGH STRENGTH AND MODULUS, TOUGHNESS, AND THERMAL STABILITY.

### POLYESTER

## POLYESTER

FIRST COMMERCIAL POLYESTER FIBER PRODUCTION: 1953, DUPONT COMPANY. POLYESTER IS A CATEGORY OF POLYMERS WHICH CONTAIN THE ESTER FUNCTIONAL GROUP IN THEIR MAIN CHAIN. POLYESTER IS THE MOST DURABLE OF THE COMMON MATERIALS. IT HAS GOOD BREAKING LOAD AND A LOW ELONGATION. IT HAS GOOD RESISTANCE AGAINST SUNLIGHT, EXTERNAL ABRASION. POLYESTER DOES NOT LOSE STRENGTH RAPIDLY DUE TO CYCLIC LOADING. POLYESTER HAS A LOW CO-EFFICIENT OF FRICTION. POLYESTER IS USED AS A MATERIAL FOR THE COVER ( PROTECTION AGAINST UV RADIATION ) IN THE HIG-TECH ROPES AND IS MOST WIDELY USED FIBER IN YACHTING ROPES AS WELL AS FOR ANCHORING LINES.

### POLYAMIDE

## POLYAMIDE

FIRST COMMERCIAL NYLON FIBER PRODUCTION: 1939, DUPONT COMPANY. A MANUFACTURED FIBER IN WHICH THE FIBER FORMING SUBSTANCE IS A LONG-CHAIN SYNTHETIC POLYAMIDE IN WHICH LESS THAN 85% OF THE AMIDE-LINKAGES ARE ATTACHED DIRECTLY (-CO NH-) TO TWO ALIPHATIC GROUPS. POLYAMIDES-OF ITS STRENGTH WHEN WET. THE ABRASION RESISTANCE OF POLYAMIDE IS BETTER IN WET CONDITIONS THAN IN DRY CONDITIONS. POLYAMIDE CAN BECOME STIFF ( KEPT IN WET CONDITION FOR TOO LONG ). THE MOST IMPORTANT POLYAMIDES ARE PA 6 AND PA 6.6. POLYAMIDE IS USED FOR MOORING LINES, SPORT CLIMBING ROPES, SAFETY AND RESCUE ROPES.

## OUR TREATMENTS



THIS SPECIAL POLYURETHANE COATING KNOWN AS LONG LASTING- MOST EFFICIENT KIND OF PROTECTIVE COATING THAT IS BEING APPLIED TO EACH OF OUR HIGH-TECH LINES TO IMPROVE ABRASION RESISTANCE ON THE ROPES AND AVOIDS SLIPPAGE BETWEEN COVER AND CORE. THIS PARTICULAR PROCESS OFFERS EXCELLENT SUBSTRATE PROTECTION TO GET BETTER RESULTS, WHICH ALSO MAKES THE SPlicing MUCH EASIER.



THIS PARTICULAR THERMAL PROCESS INCREASES EFFICIENCY AND STRENGTH OF DYNEEMA® ROPES, WHICH ALSO ACHIEVES SIGNIFICANT IMPROVEMENTS IN THE BREAK LOAD OF THE ROPE AND ALMOST ELIMINATES THE 'CREEP' THAT HELPS ROPES TO HAVE BETTER PERFORMANCE. THIS PROCEDURE CONTRACTS THE YARNS AND INCREASES THE NET FIBER DENSITY OF THE ROPE AS WELL. THE ROPES BECOME STRONGER AND MORE DURABLE THAN STANDARD PRODUCTION PERFORMANCE ROPES THROUGH THESE PROCESSES.

DYNEEMA® FIBER CURRENTLY HAS A LOWEST STRETCH AMONG ALL THE OTHER SYNTHETIC FIBERS. HOWEVER, THE CONSTRUCTIONAL ELONGATION WILL OCCUR DURING TWISTING AND BRAIDING PROCESSES OF BASIC ROPE MANUFACTURING PROCEDURE. PRE-STRETCH METHOD IS USED TO MINIMIZE THIS CONSTRUCTIONAL ELONGATION AND IMPROVE ROPE STRENGTH. WHEN THE HEAT SET AND PRE-STRETCH PROCESS APPLIED ON THE ROPE TOGETHER, THE BOTH CONSTRUCTIONAL AND STRUCTURAL ELONGATION WILL BE REDUCED YET FURTHER INCREASE IN STRENGTH IS ALSO OBTAINED BY MAKING THE POLYMER TO LINEAR ARRAY. WE APPLY THIS METHOD TO ALL OF OUR HIGH-TECH AND MID-TECH LINES TO HAVE AN EXCELLENT PRODUCT THAT EXCEEDS OUR CUSTOMER'S NEEDS.



REVIEW OF PRODUCTS AND APPLICATIONS																
PRODUCT NAME	PAGE	CORE	COVER	CONSTRUCTION	VESSEL LINES						TUG LINES					
					PRIMARY MOORING LINES	SECONDARY MOORING LINES	GENERAL WORKING LINES	TOW LINES	PENDANTS	STOPPERS	MAIN TOW LINES	BARGE TIE-UP LINES	BARGE AND DREDGE WORKING LINES	H-BITT WORKING LINES	MESSENGER LINES	SHOCK LINES
DYNE K®	12	DYNEEMA®		12 STRAND	●		●	●				●			●	
DYNE K® 38	13	DYNEEMA®		12 STRAND	●		●	●								
DYNE K® SBF	14	DYNEEMA®		12 STRAND												
ROCK STRONG PLUS	16	DYNEEMA®	HT POLYESTER	DOUBLE BRAID	●							●				●
ROCK STRONG D-PLUS	17	DYNEEMA®	DYNEEMA®	DOUBLE BRAID	●							●				●
LUPP® HIGH TENACITY SQUARE	18	HT POLYPROPYLENE		8 STRAND	●	●	●	●				●	●			
TANKER SQUARE	19	HT POLYOLEFIN + POLYESTER		8 STRAND	●	●	●	●	●			●	●	●		
LUPA® STANDARD	20	HT POLYAMIDE	HT POLYAMIDE	DOUBLE BRAID		●	●	●	●						●	●
LUPES® STANDARD	21	HT POLYESTER	HT POLYESTER	DOUBLE BRAID		●	●	●	●						●	
LUPES® LS	22	HT POLYESTER	HT POLYESTER	DOUBLE BRAID			●	●			●					●
LUPES® ROUND	24	HT POLYESTER		12 STRAND		●	●	●	●	●					●	●
LUPA® ROUND	25	HT POLYAMIDE		12 STRAND		●	●	●	●	●					●	
LUPP® ROUND	26	HT POLYPROPYLENE		12 STRAND		●										
LUPES® SQUARE	28	HT POLYESTER		8 STRAND		●	●	●	●	●				●		●
LUPA® SQUARE	29	HT POLYAMIDE		8 STRAND	●	●	●	●	●	●			●		●	●
LUPP® SQUARE	30	HT POLYPROPYLENE		8 STRAND		●										
LUPES® TWIST	32	HT POLYESTER		3 STRAND		●	●									
LUPA® TWIST	33	HT POLYAMIDE		3 STRAND		●	●								●	●
LUPP® TWIST	34	HT POLYPROPYLENE		3 STRAND												
LUPP® FILM TWIST	35	HT POLYPROPYLENE		3 STRAND			●					●	●		●	
LUPES® TWIST + WIRE C	36	6x7 WIRE	HT POLYESTER	3+1 STRAND												
LUPES® CORD	38	HT POLYESTER	HT POLYESTER	DOUBLE BRAID												
LUPA® CORD	38	HT POLYAMIDE	HT POLYAMIDE	DOUBLE BRAID												
LUPP® CORD	39	HT PP	HT PP	DOUBLE BRAID												
DYNE K® SINGLE LEG TUG PENDANT	40	DYNEEMA®		12 STRAND												●
DYNE K® GROMMET TUG PENDANT	41	DYNEEMA®		12 STRAND												●
LUPA® ROUND SINGLE LEG MOORING PENDANT	42	HT POLYAMIDE		12 STRAND												●
LUPA® ROUND GROMMET MOORING PENDANT	43	HT POLYAMIDE		12 STRAND												●
LUPA® ROUND SINGLE LEG TUG SHOCK LINE	44	HT POLYAMIDE		12 STRAND											●	
LUPA® ROUND GROMMET TUG SHOCK LINE	45	HT POLYAMIDE		12 STRAND											●	
DYNE K® SHACKLE	55	DYNEEMA®		12 STRAND												

## REVIEW OF PRODUCTS AND APPLICATIONS

FISHING LINES				OTHER LINES							CONSTRUCTION	COVER	CORE	PAGE	STANDARD	PRODUCT NAME
TRAWL / BRIDLE LINES	OTHER FISHING LINES	PURSE SEINE LINES	WIRE ROPE REPLACEMENT	FLAG LINES	THROW LINES	CONNECTION LINES	DAVIT ROPES	ETS ROPES	SALVAGE ROPES	LIFTING SLINGS						
●	●		●				●	●	●	●	12 STRAND	DYNEEMA®		12	ISO 10325	DYNE K®
	●	●	●				●	●	●	●	12 STRAND	DYNEEMA®		13	-	DYNE K® 38
							●			●	12 STRAND	DYNEEMA®		14	ISO 10325	DYNE K® SBF
										●	DOUBLE BRAID	HT POLYESTER	DYNEEMA®	16	ISO 10325	ROCK STRONG PLUS
●			●							●	DOUBLE BRAID	DYNEEMA®	DYNEEMA®	17	ISO 10325	ROCK STRONG D-PLUS
●	●	●			●						8 STRAND	HT POLYPROPYLENE		18	ISO 10572	LUPP® HIGH TENACITY SQUARE
										●	8 STRAND	HT POLYOLEFIN + POLYESTER		19	ISO 10556	TANKER SQUARE
●	●										DOUBLE BRAID	HT POLYAMIDE	HT POLYAMIDE	20	ISO 10554	LUPA® STANDARD
●											DOUBLE BRAID	HT POLYESTER	HT POLYESTER	21	ISO 10547	LUPES® STANDARD
●		●									DOUBLE BRAID	HT POLYESTER	HT POLYESTER	22	ISO 10547	LUPES® LS
				●	●						12 STRAND	HT POLYESTER		24	EN ISO 1141	LUPES® ROUND
				●	●						12 STRAND	HT POLYAMIDE		25	EN ISO 1140	LUPA® ROUND
											12 STRAND	HT POLYPROPYLENE		26	EN ISO 1346	LUPP® ROUND
●	●	●		●	●					●	8 STRAND	HT POLYESTER		28	EN ISO 1141	LUPES® SQUARE
	●			●	●						8 STRAND	HT POLYAMIDE		29	EN ISO 1140	LUPA® SQUARE
											8 STRAND	HT POLYPROPYLENE		30	EN ISO 1346	LUPP® SQUARE
	●										3 STRAND	HT POLYESTER		32	EN ISO 1141	LUPES® TWIST
	●										3 STRAND	HT POLYAMIDE		33	EN ISO 1140	LUPA® TWIST
	●										3 STRAND	HT POLYPROPYLENE		34	EN ISO 1346	LUPP® TWIST
●	●	●						●			3 STRAND	HT POLYPROPYLENE		35	EN ISO 1346	LUPP® FILM TWIST
●											3+1 STRAND	HT POLYESTER	6x7 WIRE	36	-	LUPES® TWIST + WIRE C
	●										DOUBLE BRAID	HT POLYESTER	HT POLYESTER	38	ISO 10547	LUPES® CORD
●	●										DOUBLE BRAID	HT POLYAMIDE	HT POLYAMIDE	38	ISO 10554	LUPA® CORD
	●										DOUBLE BRAID	HT PP	HT PP	39	-	LUPP® CORD
											12 STRAND	DYNEEMA®		40	ISO 10325	DYNE K® SINGLE LEG TUG PENDANT
											12 STRAND	DYNEEMA®		41	ISO 10325	DYNE K® GROMMET TUG PENDANT
											12 STRAND	HT POLYAMIDE		42	EN ISO 1140	LUPA® ROUND SINGLE LEG MOORING PENDANT
											12 STRAND	HT POLYAMIDE		43	EN ISO 1140	LUPA® ROUND GROMMET MOORING PENDANT
											12 STRAND	HT POLYAMIDE		44	EN ISO 1140	LUPA® ROUND SINGLE LEG TUG SHOCK LINE
											12 STRAND	HT POLYAMIDE		45	EN ISO 1140	LUPA® ROUND GROMMET TUG SHOCK LINE
						●					12 STRAND	DYNEEMA®		55	-	DYNE K® SHACKLE





## *HIGH PERFORMANCE ROPES*



## *CONVENTIONAL ROPES*



## *PENDANTS*



## *SHOCK LINES*



## *PROTECTIVE SLEEVES*



## *WIRE ROPES*



## *HARWARE & SOFT SHACKLES*

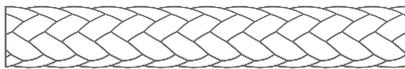


## *SLINGS*

DYNE K®



005 - DYNE K®



**BENEFITS / FEATURES**

- SUPERIOR ABRASION RESISTANCE
- EXCELLENT BREAKING LOAD
- BUOYANT
- DURABLE
- VERY LOW STRETCH
- LIGHTWEIGHT
- EASY TO SPLICE
- DOES NOT KINK

**APPLICATIONS**

- VESSEL PRIMARY MOORING LINES
- VESSEL TOW LINES
- TUG PENDANTS
- TUG MAIN TOW LINES
- TUG MESSENGER LINES
- DAVIT ROPES
- ETS ROPES
- LIFTING SLINGS (STATIC)
- SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	ISO 10325
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT** (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
			UNSPLICED	SPLICED
005	6	2,30	3.750	3.360
005	8	4,00	6.600	5.980
005	10	6,10	10.400	9.380
005	12	8,70	15.000	13.460
005	14	11,70	20.400	18.360
005	16	15,10	26.520	23.700
005	18	19,00	31.620	28.500
005	20	23,20	38.760	34.000
005	22	28,10	45.900	40.800
005	24	33,10	53.000	47.000
005	26	38,40	61.200	54.000
005	28	44,50	69.360	61.000
005	30	50,60	78.540	70.380
005	32	57,50	88.740	79.560
005	34	64,80	97.920	87.720
005	36	72,00	106.080	95.880
005	38	79,80	118.320	106.080
005	40	88,10	128.520	115.260
005	42	97,00	138.720	124.440
005	44	106,00	148.920	133.620
005	48	125,00	173.400	156.060
005	50	135,50	187.170	168.300
005	52	146,00	201.000	180.540
005	56	169,00	230.520	207.060
005	60	193,00	258.060	232.560
005	64	220,00	289.680	261.120
005	68	248,00	323.340	290.700
005	72	278,00	359.040	323.340

\*BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307) \*\*THE WEIGHT MAY VARY AROUND ±5 DUE TO SPECIAL COATING





APPLICATIONS

- VESSEL PRIMARY MOORING LINES
- VESSEL TOW LINES
- VESSEL GENERAL WORKING LINES
- OTHER FISHING LINES
- PURSE SIENE LINES
- DAVIT ROPES
- ETS ROPES
- LIFTING SLINGS (STATIC)
- SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	COATED DYNEEMA® SK 38
SPECIFIC GRAVITY	0,97 KG/DM³
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	-
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST



506 - DYNE K® 38

ART.NO	DIA (mm) (Ø)	WEIGHT** (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
			UNSPLICED	SPLICED
506	6	2,30	1.960	1.756
506	8	4,00	3.450	3.125
506	10	6,10	5.436	4.902
506	12	8,70	7.840	7.035
506	14	11,70	10.662	9.596
506	16	15,10	13.861	12.387
506	18	19,00	16.526	14.896
506	20	23,20	20.258	17.770
506	22	28,10	23.990	21.324
506	24	33,10	27.701	24.565
506	26	38,40	31.987	28.223
506	28	44,50	36.393	31.882
506	30	50,60	41.049	36.785
506	32	57,50	46.381	41.583
506	34	64,80	51.179	45.847
506	36	72,00	55.443	50.112
506	38	79,80	61.841	55.443
506	40	88,10	67.172	60.241
506	42	97,00	72.503	65.039
506	44	106,00	77.834	69.837
506	48	125,00	90.629	81.566
506	50	135,50	97.826	87.963
506	52	146,00	105.054	94.361
506	56	169,00	120.483	108.221
506	60	193,00	134.877	121.549
506	64	220,00	151.403	136.476
506	68	248,00	168.996	151.936
506	72	278,00	187.655	168.996

\*BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307) \*\*THE WEIGHT MAY VARY AROUND ±5 DUE TO SPECIAL COATING



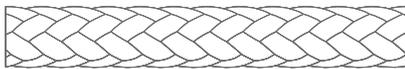
BENEFITS / FEATURES
SUPERIOR ABRASION RESISTANCE
HIGH BREAKING LOAD
BUOYANT
DURABLE
VERY LOW STRETCH
LIGHTWEIGHT
EASY TO SPLICE
DOES NOT KINK



DYNE K® SBF



405 - DYNE K® SBF



**BENEFITS / FEATURES**

- SUPERIOR BENDING FATIGUE (SBF)
- EXCELLENT BREAKING LOAD
- BUOYANT
- DURABLE
- VERY LOW STRETCH
- LIGHTWEIGHT
- EASY TO SPLICE
- DOES NOT KINK

**APPLICATIONS**

- DAVIT ROPES
- LIFTING SLINGS (DYNAMIC)

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	ISO 10325
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT** (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
			UNSPLICED	SPLICED
405	6	2,30	3.750	3.360
405	8	4,00	6.600	5.980
405	10	6,10	10.400	9.380
405	12	8,70	15.000	13.460
405	14	11,70	20.400	18.360
405	16	15,10	26.520	23.700
405	18	19,00	31.620	28.500
405	20	23,20	38.760	34.000
405	22	28,10	45.900	40.800
405	24	33,10	53.000	47.000
405	26	38,40	61.200	54.000
405	28	44,50	69.360	61.000
405	30	50,60	78.540	70.380
405	32	57,50	88.740	79.560
405	34	64,80	97.920	87.720
405	36	72,00	106.080	95.880
405	38	79,80	118.320	106.080
405	40	88,10	128.520	115.260
405	42	97,00	138.720	124.440
405	44	106,00	148.920	133.620
405	48	125,00	173.400	156.060
405	50	135,50	187.170	168.300
405	52	146,00	201.000	180.540
405	56	169,00	230.520	207.060
405	60	193,00	258.060	232.560
405	64	220,00	289.680	261.120
405	68	248,00	323.340	290.700
405	72	278,00	359.040	323.340

\*BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307) \*\*THE WEIGHT MAY VARY AROUND ±5 DUE TO SPECIAL COATING







026 - ROCK STRONG® PLUS



**BENEFITS / FEATURES**

- EXCELLENT BREAKING LOAD
- DURABLE
- VERY LOW STRETCH
- FIRM AND ROUND
- DOES NOT KINK

**APPLICATIONS**

- VESSEL PRIMARY MOORING LINES
- TUG MAIN TOW LINES
- TUG PENDANTS
- SALVAGE ROPES

SEE PAGES 8-9

**SPECIFICATIONS**

<b>MATERIAL</b>	COVER : HT POLYESTER FIBER INNER COVER : - CORE : COATED DYNEEMA® SK 75/78
<b>SPECIFIC GRAVITY</b>	1,00 - 1,20 KG/DM <sup>3</sup>
<b>CONSTRUCTION</b>	COVER : 24 - 32 PLAITED CORE : 12 - 16 PLAITED
<b>UV RESISTANCE</b>	EXCELLENT
<b>CHEMICAL RESISTANCE</b>	GOOD
<b>MELTING POINT</b>	147°C - 256°C
<b>CRITICAL TEMPERATURE</b>	65°C
<b>WORKING STRETCH</b>	<1,5%
<b>FIBER WATER ABSORPTION</b>	APPROX. 0-1%
<b>WET ABRASION</b>	GOOD
<b>DRY ABRASION</b>	GOOD
<b>STANDARD</b>	ISO 10325
<b>LENGTH</b>	UPON REQUEST

LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
	(Ø)		
026	20	24,00	28.000
026	22	29,00	35.000
026	24	34,00	41.000
026	26	40,00	48.000
026	28	46,00	55.000
026	32	60,00	74.000
026	36	77,00	92.000
026	40	94,00	115.000
026	44	115,00	139.000
026	48	136,00	162.000
026	52	160,00	193.000
026	56	185,00	220.000
026	60	212,00	253.000
026	64	240,00	289.000
026	68	272,00	327.000
026	72	307,00	364.000
026	76	340,00	403.000
026	80	375,00	452.000
026	88	450,00	536.000
026	96	530,00	629.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





# ROCK STRONG® D-PLUS

## APPLICATIONS

- VESSEL PRIMARY MOORING LINES
- TUG MAIN TOW LINES
- TUG PENDANTS
- SALVAGE ROPES
- TRAWL/BRIDLE LINES

SEE PAGES 8-9

## SPECIFICATIONS

MATERIAL	COVER : DYNEEMA® SK 75/78 INNER COVER : - CORE : COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM <sup>3</sup>
CONSTRUCTION	COVER : 24 - 32 PLAITED CORE : 12 - 16 PLAITED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1,5%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	ISO 10325
LENGTH	UPON REQUEST

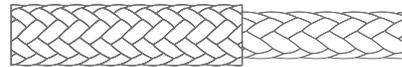
LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
126	20	22,90	28.000
126	22	27,30	35.000
126	24	32,50	41.000
126	26	39,20	48.000
126	28	45,20	55.000
126	32	57,10	74.000
126	36	71,10	92.000
126	40	86,00	115.000
126	44	101,30	139.000
126	48	125,00	162.000
126	52	147,00	193.000
126	56	169,00	220.000
126	60	191,00	253.000
126	64	221,00	289.000
126	68	248,00	327.000
126	72	278,00	364.000
126	76	313,00	403.000
126	80	340,00	452.000
126	88	401,00	536.000
126	96	480,00	629.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



126 - ROCK STRONG® D-PLUS



## BENEFITS / FEATURES

- SUPERIOR ABRASION RESISTANCE
- EXCELLENT BREAKING LOAD
- DURABLE
- VERY LOW STRETCH
- FIRM AND ROUND
- DOES NOT KINK
- LIGHTWEIGHT



HIGH PERFORMANCE ROPES

ROCK STRONG® D-PLUS

LUPP® HIGH TENACITY SQUARE



027 - LUPP® HIGH TENACITY SQUARE



**BENEFITS / FEATURES**

- EXCELLENT GRIP
- MODERATE ELONGATION
- BUOYANT
- ECONOMICALLY PRICED
- DOES NOT KINK
- EASY TO SPLICE
- %25-30 MORE STRENGTH THAN NORMAL PP ROPES

**APPLICATIONS**

- VESSEL PRIMARY MOORING LINE
- VESSEL SECONDARY MOORING LINE
- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- TUG BARGE TIE-UP LINE
- TUG BARGE AND DREDGE WORKING LINE
- TRAWL/BRIDLE LINE
- OTHER FISHING LINE

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYOLEFIN FILM FIBER
TYPE	L
SPECIFIC GRAVITY	0,94 KG/DM <sup>3</sup>
CONSTRUCTION	8 STRAND PLAITED (4X2)
UV RESISTANCE	SUFFICIENT
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.23%
FIBER WATER ABSORPTION	NONE
WET ABRASION	SUFFICIENT
DRY ABRASION	SUFFICIENT
COLOUR	WHITE - AQUA GREEN
STANDARD	ISO 10572
LENGTH	200-220 M COIL

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
027	40	72,50	25.700
027	48	104,00	36.600
027	56	142,00	52.000
027	64	186,00	67.550
027	72	235,00	84.500
027	80	290,00	104.000
027	88	351,00	125.000
027	96	417,00	148.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





## TANKER SQUARE

### APPLICATIONS

VESSEL PRIMARY MOORING LINE  
 VESSEL SECONDARY MOORING LINE  
 VESSEL GENERAL WORKING LINE  
 VESSEL TOW LINE  
 TUG BARGE TIE-UP LINE  
 TUG BARGE AND DREDGE WORKING LINE  
 TUG H-BITT WORKING LINE  
 TRAWL/BRIDLE LINE

SEE PAGES 8-9

### SPECIFICATIONS

MATERIAL	100% HT POLYOLEFIN & POLYESTER MIX FIBER
TYPE	L
SPECIFIC GRAVITY	1,10 KG/DM <sup>3</sup>
CONSTRUCTION	8 STRAND PLAITED (4X2)
UV RESISTANCE	GOOD
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.19%
FIBER WATER ABSORPTION	0,15%
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	WHITE - ORANGE
STANDARD	ISO 10556
LENGTH	200-220 M COIL

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (∅)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
036	40	88,40	30.000
036	48	128,00	46.290
036	56	172,00	67.800
036	64	225,00	82.600
036	72	285,00	102.000
036	80	352,00	125.500
036	88	502,00	156.000
036	96	598,00	185.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



036 - TANKER SQUARE



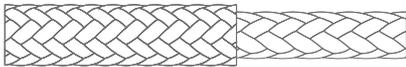
### BENEFITS / FEATURES

GOOD BREAKING LOAD  
 GOOD SHOCK ABSORPTION  
 DOES NOT KINK  
 FLEXIBLE  
 DURABLE  
 GENERAL ACCORDANCE WITH OCIMF GUIDELINE

LUPA® STANDARD



008 LUPA® STANDARD



**BENEFITS / FEATURES**

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK

**APPLICATIONS**

- VESSEL SECONDARY MOORING LINE
- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- VESSEL PENDANT
- TUG SHOCK LINE
- TUG PENDANT
- TRAWL/BRIDLE LINE
- OTHER FISHING LINE

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	-
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	COVER : 24-32 PLAITED / CORE : 12-16 PLAITED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX. %30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	ISO 10554
LENGTH	UPON REQUEST

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
008	8	3,98	1.500
008	10	6,22	2.380
008	12	8,96	3.230
008	14	12,20	4.350
008	16	15,90	5.630
008	18	20,20	7.100
008	20	24,90	8.720
008	22	30,10	10.500
008	24	35,80	13.400
008	26	42,00	15.500
008	28	48,80	17.800
008	30	56,00	20.300
008	32	63,70	22.900
008	36	80,60	28.700
008	40	99,50	35.100
008	48	143,00	50.000
008	56	195,00	68.000
008	64	255,00	89.000
008	72	322,00	112.000
008	80	398,00	138.000
008	88	482,00	167.000
008	96	573,00	198.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





**APPLICATIONS**

- VESSEL SECONDARY MOORING LINE
- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- VESSEL PENDANT
- TUG SHOCK LINE
- TRAWL/BRIDLE LINE

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYESTER FIBER
TYPE	-
SPECIFIC GRAVITY	1,38 KG/DM <sup>3</sup>
CONSTRUCTION	COVER : 24-32 PLAITED / CORE : 12-16 PLAITED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
ELONGATION AT BREAK	APPROX.%15
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	ISO 10547
LENGTH	UPON REQUEST

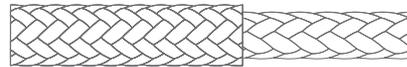
OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
007	8	5,10	1.550
007	10	7,97	2.330
007	12	11,50	3.270
007	14	15,60	4.370
007	16	20,40	5.630
007	18	25,80	7.000
007	20	31,90	8.600
007	22	38,60	10.300
007	24	45,90	13.100
007	26	53,90	15.100
007	28	62,50	17.300
007	30	71,70	19.600
007	32	81,60	22.000
007	36	100,30	27.400
007	40	128,00	33.000
007	48	184,00	46.000
007	56	250,00	62.000
007	64	326,00	80.000
007	72	413,00	100.000
007	80	510,00	123.000
007	88	617,00	148.000
007	96	735,00	175.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



007 LUPES® STANDARD



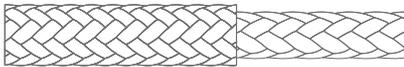
**BENEFITS / FEATURES**

- SOFT HAND
- DOES NOT HARDEN
- DURABLE

LUPES® LS



207 LUPES® LS



**BENEFITS / FEATURES**

- OUTSTANDING FLEXIBILITY
- HIGH BREAKING LOAD
- EASY TO SPLICE
- DOES NOT KINK
- SHARES THE LOAD EQUALLY BETWEEN COVER AND CORE
- STRETCHES LESS THAN THE STANDARD POLYESTER

**APPLICATIONS**

- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- TUG MAIN TOW LINE
- TUG PENDANT LINE
- TRAWL/BRIDLE LINE
- PURSE SIENE LINE

SEE PAGES 8-9

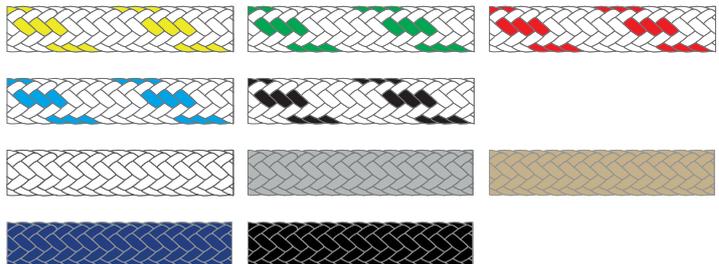
**SPECIFICATIONS**

<b>MATERIAL</b>	COVER : HT POLYESTER FIBER INNER COVER : - CORE : COATED HT POLYESTER FIBER
<b>SPECIFIC GRAVITY</b>	1,38 KG/DM <sup>3</sup>
<b>CONSTRUCTION</b>	COVER : 24 - 32 PLAITED CORE : 12 - 16 PLAITED
<b>UV RESISTANCE</b>	EXCELLENT
<b>CHEMICAL RESISTANCE</b>	GOOD
<b>MELTING POINT</b>	256°C
<b>CRITICAL TEMPERATURE</b>	170°C
<b>WORKING STRETCH</b>	<4%
<b>FIBER WATER ABSORPTION</b>	APPROX. %1-2
<b>WET ABRASION</b>	GOOD
<b>DRY ABRASION</b>	GOOD
<b>STANDARD</b>	ISO 10547
<b>LENGTH</b>	UPON REQUEST

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
207	6	2,87	1.200
207	8	5,10	1.700
207	10	7,97	2.560
207	12	11,50	3.600
207	14	15,60	4.800
207	16	20,40	6.500
207	18	25,80	8.200
207	20	31,90	10.000
207	22	38,60	11.300
207	24	45,90	14.400
207	26	53,90	16.600
207	28	62,50	19.000
207	30	71,70	21.500
207	32	81,60	24.200
207	36	100,30	30.100
207	40	128,00	36.300
207	48	184,00	50.600
207	56	250,00	68.200
207	64	326,00	88.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

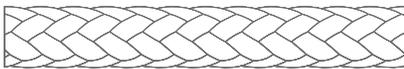




LUPES® ROUND



217 LUPES® ROUND



BENEFITS / FEATURES

- DURABLE
- EASY TO SPLICE
- DOES NOT KINK
- SOFT HAND

APPLICATIONS

- VESSEL SECONDARY MOORING LINE
- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- VESSEL PENDANT
- VESSEL STOPPERS
- TUG SHOCK LINE
- TUG PENDANT
- FLAG LINE

SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	100% HT POLYESTER FIBER
TYPE	T
SPECIFIC GRAVITY	1,38 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
ELONGATION AT BREAK	APPROX.%15-20
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1141
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
	(Ø)		
217	8	4,85	1.300
217	10	7,57	2.060
217	12	10,90	2.875
217	14	14,90	3.875
217	16	19,40	5.000
217	18	24,60	6.250
217	20	30,30	8.250
217	22	36,70	10.000
217	24	43,70	11.500
217	26	51,20	13.500
217	28	59,40	17.300
217	30	68,20	17.750
217	32	77,60	20.000
217	36	98,20	25.000
217	40	121,00	33.000
217	48	175,00	46.000
217	56	238,00	62.000
217	64	310,00	80.000
217	72	393,00	100.000
217	80	485,00	123.000
217	88	587,00	148.000
217	96	699,00	175.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





APPLICATIONS

- VESSEL SECONDARY MOORING LINE
- VESSEL GENERAL WORKING LINE
- VESSEL TOW LINE
- VESSEL PENDANT
- VESSEL STOPPERS
- TUG SHOCK LINE

SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	T
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX.%30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	100-200 M ORANGE SPOOL OR COIL

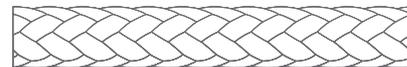
OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm) (∅)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
216	8	3,95	1.320
216	10	6,17	2.125
216	12	8,88	3.000
216	14	12,10	4.250
216	16	15,80	5.280
216	18	20,00	6.875
216	20	24,70	8.500
216	22	29,90	10.250
216	24	35,50	12.000
216	26	41,70	14.500
216	28	48,40	17.000
216	30	55,50	19.000
216	32	63,20	21.125
216	36	80,00	27.500
216	40	98,70	34.000
216	48	142,00	48.000
216	56	193,00	68.000
216	64	253,00	84.500
216	72	320,00	110.000
216	80	395,00	129.000
216	88	478,00	152.000
216	96	569,00	183.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



216 LUPA® ROUND



BENEFITS / FEATURES

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE

LUPP® ROUND



BENEFITS / FEATURES	
ECONOMICALLY PRICED	
EASY TO SPLICE	
DOES NOT KINK	
DOES NOT HARDEN	
BUOYANT	
MODERATE ELONGATION	
EXCELLENT GRIP	

APPLICATIONS

VESSEL SECONDARY MOORING LINE

SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	100% HT POLYPROPYLENE FIBER
TYPE	T
SPECIFIC GRAVITY	0,91 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	SUFFICIENT
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.%23
FIBER WATER ABSORPTION	NONE
WET ABRASION	SUFFICIENT
DRY ABRASION	SUFFICIENT
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1346
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
218	8	2,90	1.80
218	10	4,52	1.625
218	12	6,51	2.265
218	14	8,86	3.225
218	16	11,60	4.310
218	18	14,60	5.350
218	20	18,10	6.500
218	22	21,90	7.740
218	24	26,00	9.060
218	26	30,60	10.500
218	28	35,40	12.900
218	30	40,70	14.600
218	32	46,30	16.400
218	36	58,60	20.100
218	40	72,30	24.300
218	48	104,00	33.700
218	56	142,00	44.600
218	64	185,00	56.800
218	72	234,00	70.200
218	80	289,00	86.000
218	88	350,00	102.000
218	96	417,00	120.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





LUPES® SQUARE



017 LUPES® SQUARE



**BENEFITS / FEATURES**

- EASY TO SPLICE
- DOES NOT KINK
- DURABLE

**APPLICATIONS**

- VESSEL SECONDARY MOORING LINES
- VESSEL GENERAL WORKING LINES
- VESSEL TOW LINES
- VESSEL PENDANTS
- VESSEL STOPPERS
- TUG H-BITT WORKING LINES
- TUG PENDANTS
- TRAWL/BRIDLE LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYESTER FIBER
TYPE	L
SPECIFIC GRAVITY	1,38 KG/DM <sup>3</sup>
CONSTRUCTION	8 STRAND PLAITED (4X2)
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
ELONGATION AT BREAK	APPROX.%15-20
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1141
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
017	8	4,85	1.300
017	10	7,57	2.060
017	12	10,90	2.875
017	14	14,90	3.875
017	16	19,40	5.000
017	18	24,60	6.250
017	20	30,30	8.250
017	22	36,70	10.000
017	24	43,70	11.500
017	26	51,20	13.500
017	28	59,40	12.900
017	30	68,20	17.750
017	32	77,60	20.000
017	36	98,20	25.000
017	40	121,00	33.000
017	48	175,00	46.000
017	56	238,00	62.000
017	64	310,00	80.000
017	72	493,00	100.000
017	80	485,00	123.000
017	88	587,00	148.000
017	96	699,00	175.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





**APPLICATIONS**

- VESSEL PRIMARY MOORING LINES
- VESSEL SECONDARY MOORING LINES
- VESSEL GENERAL WORKING LINES
- VESSEL TOW LINES
- VESSEL PENDANTS
- VESSEL STOPPERS
- TUG BARGE AND DREDGE WORKING LINES
- TUG SHOCK LINE

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	L
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	8 STRAND PLAITED (4X2)
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX.%30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
016	8	3,95	1.320
016	10	6,17	2.125
016	12	8,88	3.000
016	14	12,10	4.250
016	16	15,80	5.280
016	18	20,00	6.875
016	20	24,70	8.500
016	22	29,90	10.250
016	24	35,50	12.000
016	26	41,70	14.500
016	28	48,40	17.000
016	30	55,50	19.000
016	32	63,20	21.125
016	36	80,00	27.500
016	40	98,70	34.000
016	48	142,00	48.000
016	56	193,00	68.000
016	64	253,00	84.500
016	72	320,00	110.000
016	80	395,00	129.000
016	88	478,00	152.000
016	96	569,00	183.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



016 LUPA® SQUARE



**BENEFITS / FEATURES**

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE

LUPP® SQUARE



018 LUPP® SQUARE



**BENEFITS / FEATURES**

- ECONOMICALLY PRICED
- EASY TO SPLICE
- EXCELLENT GRIP
- DOES NOT KINK
- BUOYANT
- MODERATE ELONGATION

**APPLICATIONS**

VESSEL SECONDARY MOORING LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYPROPYLENE FIBER
TYPE	L
SPECIFIC GRAVITY	0,91 KG/DM <sup>3</sup>
CONSTRUCTION	8 STRAND PLAITED (4X2)
UV RESISTANCE	SUFFICIENT
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.%23
FIBER WATER ABSORPTION	NONE
WET ABRASION	SUFFICIENT
DRY ABRASION	SUFFICIENT
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1346
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
018	8	2,90	1.080
018	10	4,52	1.625
018	12	6,51	2.265
018	14	8,86	3.225
018	16	11,60	4.310
018	18	14,60	5.350
018	20	18,10	6.500
018	22	21,90	7.740
018	24	26,00	9.060
018	26	30,60	10.500
018	28	35,40	12.900
018	30	40,70	14.600
018	32	46,30	16.400
018	36	58,60	20.100
018	40	72,30	24.300
018	48	104,00	33.700
018	56	142,00	44.600
018	64	185,00	56.800
018	72	234,00	70.200
018	80	289,00	86.000
018	88	350,00	102.000
018	96	417,00	120.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

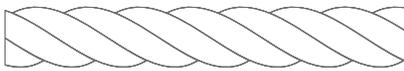




LUPES® TWIST



014 LUPES® TWIST



**BENEFITS / FEATURES**

- REMAINS FIRM UNDER LOAD
- EASY TO SPLICE
- DURABLE

**APPLICATIONS**

OTHER FISHING LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYESTER FIBER
TYPE	A
SPECIFIC GRAVITY	1,38 KG/DM <sup>3</sup>
CONSTRUCTION	3 STRAND PLAITED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
ELONGATION AT BREAK	APPROX.%15-20
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1141
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
014	4	1,21	325
014	5	1,90	515
014	6	2,73	720
014	8	4,85	1.300
014	10	7,57	2.060
014	12	10,90	2.875
014	14	14,90	3.875
014	16	19,40	5.000
014	18	24,60	6.250
014	20	30,30	8.250
014	22	36,70	10.000
014	24	43,70	11.500
014	26	51,20	13.500
014	28	59,40	12.900
014	30	68,20	17.750
014	32	77,60	20.000
014	36	98,20	25.000
014	40	121,00	33.000
014	48	175,00	46.000
014	56	238,00	62.000
014	64	310,00	80.000
014	72	493,00	100.000
014	80	485,00	123.000
014	88	587,00	148.000
014	96	699,00	175.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





**APPLICATIONS**

- VESSEL SECONDARY MOORING LINES
- VESSEL GENERAL WORKING LINES
- TUG SHOCK LINES
- TUG PENDANTS
- TRAWL/BRIDLE LINES
- OTHER FISHING LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	A
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	3 STRAND PLAITED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX.%30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

013 LUPA® TWIST



ART.NO	DIA (mm) (Ø)	WEIGHT (kg / 100 m)	B.LOAD* (kgf)
013	4	0,98	330
013	5	1,54	535
013	6	2,22	750
013	8	3,95	1.320
013	10	6,17	2.125
013	12	8,88	3.000
013	14	12,10	4.250
013	16	15,80	5.280
013	18	20,00	6.875
013	20	24,70	8.500
013	22	29,90	10.250
013	24	35,50	12.000
013	26	41,70	14.500
013	28	48,40	17.000
013	30	55,50	19.000
013	32	63,20	21.125
013	36	80,00	27.500
013	40	98,70	34.000
013	48	142,00	48.000
013	56	193,00	68.000
013	64	253,00	84.500
013	72	320,00	110.000
013	80	395,00	129.000
013	88	478,00	152.000
013	96	569,00	183.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



**BENEFITS / FEATURES**

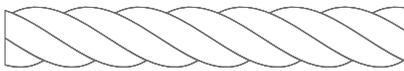
- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE



LUPP® TWIST



015 LUPP® TWIST



**BENEFITS / FEATURES**

- ECONOMICALLY PRICED
- EASY TO SPLICE
- MODERATE ELONGATION
- BUOYANT

**APPLICATIONS**

OTHER FISHING LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYPROPYLENE FIBER
TYPE	A
SPECIFIC GRAVITY	0,91 KG/DM <sup>3</sup>
CONSTRUCTION	3 STRAND
UV RESISTANCE	SUFFICIENT
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.%23
FIBER WATER ABSORPTION	NONE
WET ABRASION	SUFFICIENT
DRY ABRASION	SUFFICIENT
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1346
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
015	4	0,73	280
015	5	1,13	430
015	6	1,63	600
015	8	2,89	1.080
015	10	4,52	1.625
015	12	6,51	2.265
015	14	8,86	3.225
015	16	11,60	4.310
015	18	14,60	5.350
015	20	18,10	6.500
015	22	21,90	7.740
015	24	26,00	9.060
015	26	30,60	10.500
015	28	35,40	12.900
015	30	40,70	14.600
015	32	46,30	16.400
015	36	58,60	20.100
015	40	72,30	24.300
015	48	104,00	33.700
015	56	142,00	44.600
015	64	185,00	56.800
015	72	234,00	70.200
015	80	289,00	86.000
015	88	350,00	102.000
015	96	417,00	120.000

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)





**APPLICATIONS**

- GENERAL WORKING LINES
- TUG BARGE TIE-UP LINES
- TUG BARGE AND DREDGE WORKING LINES
- TUG MESSENGER LINES
- TRAWL/BRIDLE LINES
- OTHER FISHING LINES
- PURSE SIENE LINES

SEE PAGES 8-9

**SPECIFICATIONS**

MATERIAL	100% HT POLYPROPYLENE FILM FIBER
TYPE	A
SPECIFIC GRAVITY	0,91 KG/DM <sup>3</sup>
CONSTRUCTION	3 STRAND
UV RESISTANCE	SUFFICIENT
CHEMICAL RESISTANCE	VERY GOOD
MELTING POINT	165°C
CRITICAL TEMPERATURE	80°C
ELONGATION AT BREAK	APPROX.%23
FIBER WATER ABSORPTION	NONE
WET ABRASION	SUFFICIENT
DRY ABRASION	SUFFICIENT
COLOUR	WHITE - AQUA GREEN
STANDARD	EN ISO 1346
LENGTH	200-220 M COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm) (∅)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
022	8	2,89	1.040
022	10	4,52	1.530
022	12	6,51	2.170
022	14	8,86	2.490
022	16	11,60	3.700
022	18	14,60	4.720
022	20	18,10	5.690
022	24	26,00	7.920
022	28	35,40	10.500
022	32	46,30	13.200
022	36	58,60	16.600

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



022 LUPP® FILM TWIST

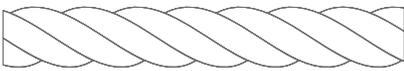


**BENEFITS / FEATURES**

- ECONOMICALLY PRICED
- EASY TO SPLICE
- DOES NOT HARDEN
- BUOYANT
- MODERATE ELONGATION

LUPES® TWIST + WIRE C 

114 LUPES® TWIST + WIRE C



BENEFITS / FEATURES
QUICK SINK RATE
EASY TO SPLICE
DURABLE

APPLICATIONS
TRAWL/BRIDLE LINES
SEE PAGES 8-9

SPECIFICATIONS	
MATERIAL	100% HT POLYESTER FIBER + 6x7 GALVANIZED WIRE ROPE
TYPE	A
SPECIFIC GRAVITY	-
CONSTRUCTION	3+1 STRAND PLAIED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
ELONGATION AT BREAK	APPROX.%4-5
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
DRY ABRASION	GOOD
COLOUR	WHITE
STANDARD	-
LENGTH	UPON REQUEST
OTHER COLOURS UPON REQUEST	

ART.NO	DIA (mm)	WEIGHT**	B.LOAD *
	(Ø)	(kg / 100 m)	(kgf)
114	30	98 (WITH 8 MM 6x7 WIRE ROPE)	-
114	32	109 (WITH 8 MM 6x7 WIRE ROPE)	-
114	32	122 (WITH 10 MM 6x7 WIRE ROPE)	-

\*\*THE WEIGHT MAY VARY AROUND ±5 DUE





LUPES® CORD



BENEFITS / FEATURES
DOES NOT HARDEN
SOFT HAND
LOW STRETCH

APPLICATIONS

OTHER FISHING LINES  
 SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	COVER : HT POLYESTER FIBER CORE : HT POLYESTER FIBER
SPECIFIC GRAVITY	1,38 KG/DM <sup>3</sup>
CONSTRUCTION	COVER : 16-20-24 PLAITED, CORE : 12-16 PLAITED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	GOOD
MELTING POINT	256°C
CRITICAL TEMPERATURE	170°C
WORKING STRETCH	<6%
FIBER WATER ABSORPTION	APPROX. %1-2
WET ABRASION	GOOD
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
	(Ø)		
607	2	0,32	90
607	2,5	0,50	125
607	3	0,72	180
607	4	1,27	310
607	5	2,00	480
607	6	2,87	680

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

LUPA® CORD



BENEFITS / FEATURES
HIGH STRENGTH
EXCELLENT SHOCK ABSORPTION
HIGH STRETCH
DURABLE
SOFT HAND

APPLICATIONS

TRAWL/BRIDLE LINES  
 SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	COVER : HT POLYAMIDE FIBER CORE : HT POLYAMIDE FIBER
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	COVER : 16-20-24 PLAITED, CORE : 12-16 PLAITED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
WORKING STRETCH	<12%
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
LENGTH	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
	(Ø)		
108	2	0,25	120
108	2,5	0,60	135
108	3	0,60	195
108	4	1,05	330
108	5	1,60	510
108	6	2,24	730

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



**APPLICATIONS**

OTHER FISHING LINES

SEE PAGES 8-9

**SPECIFICATIONS**

<b>MATERIAL</b>	COVER : HT POLYPROPYLENE FIBER CORE : HT POLYPROPYLENE FIBER
<b>SPECIFIC GRAVITY</b>	0,91 KG/DM <sup>3</sup>
<b>CONSTRUCTION</b>	COVER : 16-20-24 PLAITED, CORE : 12-16 PLAITED
<b>UV RESISTANCE</b>	SUFFICIENT
<b>CHEMICAL RESISTANCE</b>	VERY GOOD
<b>MELTING POINT</b>	165°C
<b>CRITICAL TEMPERATURE</b>	80°C
<b>WORKING STRETCH</b>	<8%
<b>FIBER WATER ABSORPTION</b>	NONE
<b>WET ABRASION</b>	SUFFICIENT
<b>LENGTH</b>	100-200 M ORANGE SPOOL OR COIL

OTHER COLOURS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT (kg / 100 m)	B.LOAD * (kgf)
309	2	0,18	70
309	2,5	0,28	105
309	3	0,40	150
309	4	0,73	280
309	5	1,13	430
309	6	1,63	600

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

309 LUPP® CORD

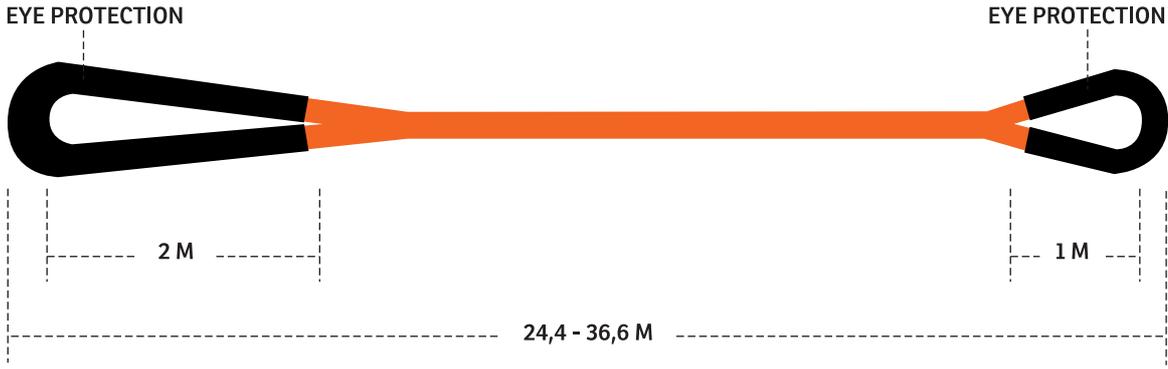


**BENEFITS / FEATURES**

- MODERATE ELONGATION
- DOES NOT HARDEN
- BUOYANT
- ECONOMICALLY PRICED



DYNE K® SINGLE LEG TUG PENDANT



STANDARD SINGLE LEG PENDANTS HAVE A 2 METER SOFT EYE ON ONE END AND A 1 METER SOFT EYE ON THE OTHER END.  
 1 METER EYE IS FOR MATING TO THE MAINLINE AND A 2 METER SOFT EYE IS FOR THE SHIPBOARD CONNECTION.



SPECIFICATIONS

MATERIAL	COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	ISO 10325
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT** (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
	(Ø)		UNSPLICED	SPLICED
125	28	44,50	69.360	61.000
125	32	57,50	88.740	79.560
125	36	72,00	106.080	95.880
125	40	88,10	128.520	115.260
125	44	106,00	148.920	133.620
125	48	125,00	173.400	156.060
125	52	146,00	201.000	180.540
125	56	169,00	230.520	207.060
125	60	193,00	258.060	232.560
125	64	220,00	289.680	261.120
125	72	278,00	359.040	323.340

\*BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)  
 \*\*THE WEIGHT MAY VARY AROUND ±5 DUE TO SPECIAL COATING

BENEFITS / FEATURES

- SUPERIOR ABRASION RESISTANCE
- EXCELLENT BREAKING LOAD
- BUOYANT
- DURABLE
- VERY LOW STRETCH
- LIGHTWEIGHT
- EASY TO SPLICE
- DOES NOT KINK

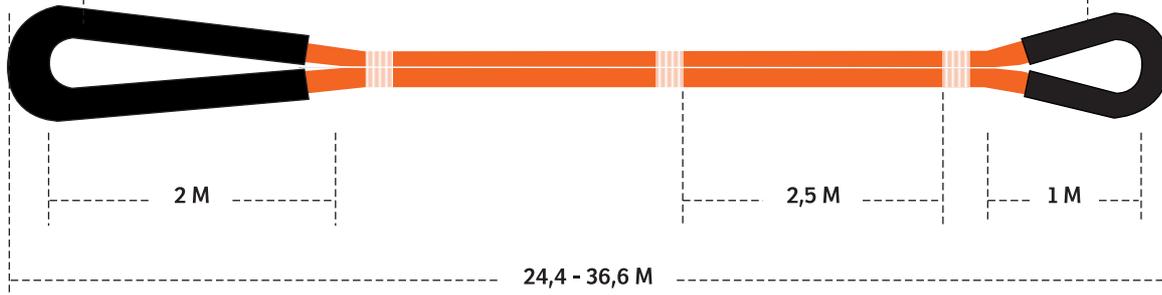




## DYNE K® GROMMET TUG PENDANT

EYE PROTECTION

EYE PROTECTION



STANDARD GROMMET PENDANTS HAVE A 2 METER SOFT EYE ON ONE END AND A 1 METER SOFT EYE ON THE OTHER END.

1 METER EYE IS FOR MATING TO THE MAINLINE AND A 2 METER SOFT EYE IS FOR THE SHIPBOARD CONNECTION.

GROMMET STRENGTH IS 1.6x THE SINGLE LEG ROPE STRENGTH.

### SPECIFICATIONS

MATERIAL	COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	ISO 10325
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (∅)	MINIMUM B.LOAD *(kgf)
		SPLICED
225	24	75.200
225	26	86.400
225	28	97.600
225	32	127.296
225	36	153.408
225	40	184.416
225	44	213.792
225	48	249.696
225	52	288.864
225	56	331.296
225	60	372.096

\*SPLICED BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



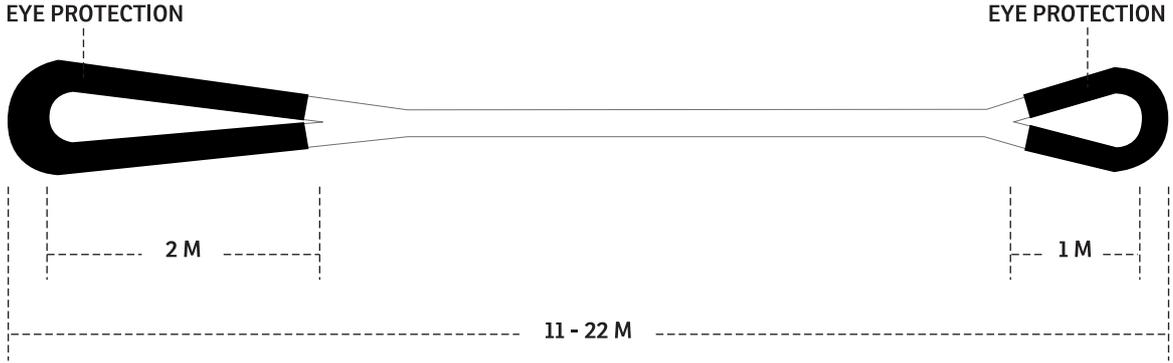
### BENEFITS / FEATURES

- SUPERIOR ABRASION RESISTANCE
- EXCELLENT BREAKING LOAD
- BUOYANT
- DURABLE
- VERY LOW STRETCH
- LIGHTWEIGHT
- EASY TO SPLICE
- DOES NOT KINK



Dyneema®

LUPA® ROUND SINGLE LEG MOORING PENDANT



STANDARD SINGLE LEG PENDANTS HAVE A 2 METER SOFT EYE ON ONE END AND A 1 METER SOFT EYE ON THE OTHER END.



SPECIFICATIONS

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	T
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX. %30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
	(Ø)		UNSPliced	SPLICED
416	40	98,70	34.000	30.600
416	48	142,00	48.000	43.200
416	56	193,00	68.000	61.200
416	64	253,00	84.500	76.050
416	72	320,00	110.000	99.000
416	80	395,00	129.000	116.100
416	88	478,00	152.000	136.800
416	96	569,00	183.000	164.700

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

PER OCIMF GUIDELINES, POLYAMIDE MOORING PENDANTS SHOULD HAVE A 37% HIGHER MINIMUM BREAKING STRENGTH THAN THE MOORING LINE. IT IS RECOMMENDED TO RETIRE MOORING PENDANTS AFTER 18 MONTHS OF USE, OR PRIOR TO RESIDUAL MONTHS OF USE, OR PRIOR TO RESIDUAL STRENGTH REDUCTION TO 60% OF THE ORIGINAL MINIMUM BREAKING STRENGTH.

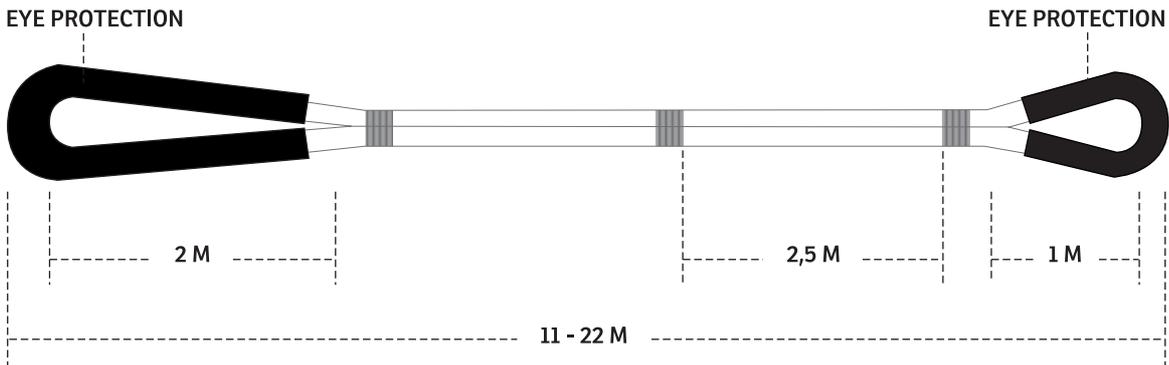
BENEFITS / FEATURES

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE





## LUPA® ROUND GROMMET MOORING PENDANT



STANDARD GROMMET PENDANTS HAVE A 2 METER SOFT EYE ON ONE END AND A 1 METER SOFT EYE ON THE OTHER END.  
GROMMET STRENGTH IS 1.6x THE SINGLE LEG ROPE STRENGTH.

### SPECIFICATIONS

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	T
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX.%30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	MINIMUM B.LOAD *(kgf)
	(∅)	SPLICED
516	32	30.420
516	36	39.600
516	40	48.960
516	48	69.120
516	56	97.920
516	64	121.680
516	72	158.400
516	80	185.760

\*SPLICED BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

PER OCIMF GUIDELINES, POLYAMIDE MOORING PENDANTS SHOULD HAVE A 37% HIGHER MINIMUM BREAKING STRENGTH THAN THE MOORING LINE. IT IS RECOMMENDED TO RETIRE MOORING PENDANTS AFTER 18 MONTHS OF USE, OR PRIOR TO RESIDUAL MONTHS OF USE, OR PRIOR TO RESIDUAL STRENGTH REDUCTION TO 60% OF THE ORIGINAL MINIMUM BREAKING STRENGTH.



### BENEFITS / FEATURES

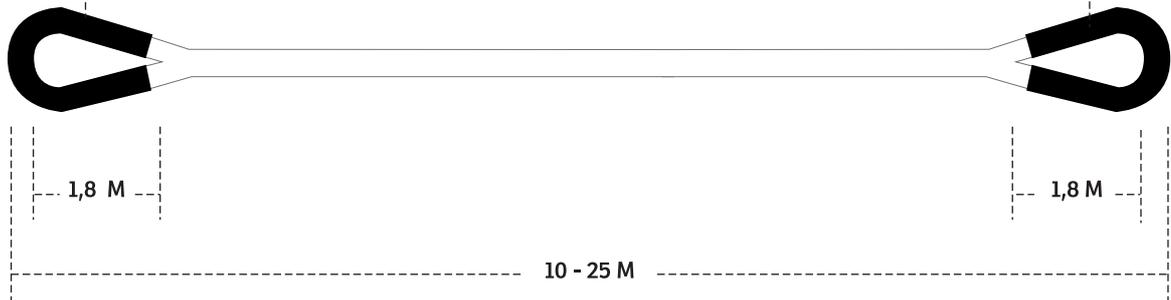
- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE

## LUPA® ROUND SINGLE LEG TUG SHOCK LINE



EYE PROTECTION

EYE PROTECTION



THE BREAKING STRENGTH OF POLYAMIDE SHOCK LINE NEEDS TO BE 1,5 TIMES THE BREAKING STRENGTH OF THE MAIN TOWING LINE.



## SPECIFICATIONS

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	T
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX. %30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	WEIGHT (kg / 100 m)	MINIMUM B.LOAD *(kgf)	
	(Ø)		UNSPliced	SPLICED
316	40	98,70	34.000	30.600
316	48	142,00	48.000	43.200
316	56	193,00	68.000	61.200
316	64	253,00	84.500	76.050
316	72	320,00	110.000	99.000
316	80	395,00	129.000	116.100
316	88	478,00	152.000	136.800
316	96	569,00	183.000	164.700

\*UNSPliced BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

POLYAMIDE ROPES ARE EXTREMELY ELASTIC AND STRETCH OUT THE OPERATIONAL LIFE OF TOW LINES. THEIR HIGH ELASTICITY ENABLES THEM TO ABSORB THE SHOCK LOADS THAT OCCUR DURING TUGGING OPERATIONS.

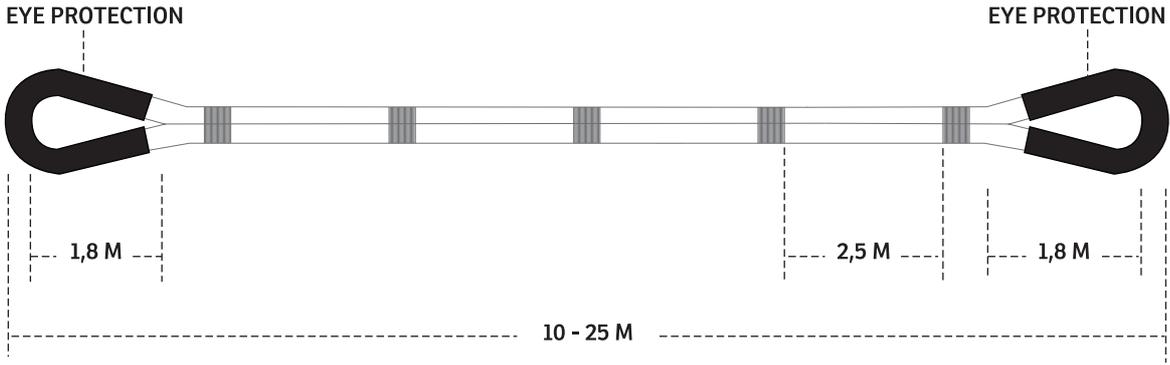
## BENEFITS / FEATURES

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE





## LUPA® ROUND GROMMET TUG SHOCK LINE



THE BREAKING STRENGTH OF POLYAMIDE SHOCK LINE NEEDS TO BE 1,5 TIMES THE BREAKING STRENGTH OF THE MAIN TOWING LINE. GROMMET STRENGTH IS 1.6x THE SINGLE LEG ROPE STRENGTH.

### SPECIFICATIONS

MATERIAL	100% HT POLYAMIDE FIBER
TYPE	T
SPECIFIC GRAVITY	1,14 KG/DM <sup>3</sup>
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	VERY GOOD
CHEMICAL RESISTANCE	GOOD
MELTING POINT	218°C
CRITICAL TEMPERATURE	130°C
ELONGATION AT BREAK	APPROX. %30-35
FIBER WATER ABSORPTION	APPROX. %3-4
WET ABRASION	SUFFICIENT
DRY ABRASION	GOOD
COLOUR	BLACK - WHITE - NAVY BLUE
STANDARD	EN ISO 1140
LENGTH	UPON REQUEST

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm)	MINIMUM B.LOAD *(kgf)
	(∅)	SPLICED
616	32	30.420
616	36	39.600
616	40	48.960
616	48	69.120
616	56	97.920
616	64	121.680
616	72	158.400
616	80	185.760

\*SPLICED BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)

POLYAMIDE ROPES ARE EXTREMELY ELASTIC AND STRETCH OUT THE OPERATIONAL LIFE OF TOW LINES. THEIR HIGH ELASTICITY ENABLES THEM TO ABSORB THE SHOCK LOADS THAT OCCUR DURING TUGGING OPERATIONS.



### BENEFITS / FEATURES

- HIGH STRENGTH
- EXCELLENT SHOCK ABSORPTION
- HIGH STRETCH
- DURABLE
- SOFT HAND
- DOES NOT KINK
- EASY TO SPLICE



**XTREME GUARD**



CHAFE-PRO®, MADE FROM MARINE GRADE ABRASION-RESISTANT NYLON TEXTILES, IS DESIGNED TO PROTECT LINES AND BOATS FROM ABRASION. THE BEST ANTI-CHAFE MATERIAL TO RELY ON IN A TOUGH WEATHER CONDITION IS THE ONE THAT RESISTS ABRASION, DOES NOT CAUSE HEAT BUILD-UP IN THE LINE, AND CAN BE EASILY INSTALLED - EVEN IF THE LINE ALREADY HAS BEEN DEPLOYED. "XTREME GUARD" FEATURES A HOOK AND LOOP CLOSURE SYSTEM THAT MORE THAN TRIPLES THE SHEAR STRENGTH OF THE SLEEVE. THE COVER IS MADE OF A MARINE GRADE ABRASION-RESISTANT POLYESTER AND POLYAMIDE (NYLON) WOVEN FABRIC THAT OFFERS SUPERIOR ABRASION RESISTANCE.

CHAFE PRO® IS A REGISTERED TRADEMARK OF FJORD, INC.

SPECIFICATIONS	
MATERIAL	100% HT POLYAMIDE FABRIC + VELCRO STRIP
COLOUR	BLACK
LENGTH	STANDARD LENGTH IS 3,65 METER
<b>CUSTOM LENGTHS UPON REQUEST</b>	

BENEFITS / FEATURES
SUPERIOR ABRASION RESISTANCE
VERY GOOD UV RESISTANCE
MILDEW RESISTANT
SUPER EASY TO INSTALL & REMOVE
DESIGNED TO PROTECT YOUR ROPE
HIGH FLEXIBILITY

SIZE	A	B	C	D
ROPE DIAMETER	24-36 mm	40-48 mm	52-64 mm	68-80 mm
THICKNESS OF THE CHAFE GUARD	3,5 mm	3,5 mm	3,5 mm	3,5 mm
STANDARD LENGTH	3,65 m	3,65 m	3,65 m	3,65 m



## POLYESTER GUARD



POLYESTER WOVEN SLEEVE IS STRONG, RESISTANT TO UV LIGHT AND CHEMICALS, KIND ON THE HANDS AND STRETCHES JUST MODERATELY WHEN LOADED AND IDEAL FOR PROTECTING SPLICED EYES .THIS IS THE FIBER TO CHOOSE IN ANY APPLICATION WHERE ULTIMATE PERFORMANCE OR MINIMUM WEIGHT IS NOT ABSOLUTELY ESSENTIAL. IT IS AVAILABLE IN DIFFERENT COLORS.

### SPECIFICATIONS

MATERIAL	100% HT POLYESTER FABRIC
COLOUR	BLACK - BLUE - GREY - ORANGE - NAVY BLUE
LENGTH	STANDARD LENGTH IS 3,65 METER

CUSTOM LENGTHS UPON REQUEST

### BENEFITS / FEATURES

GOOD ABRASION RESISTANCE  
EXCELLENT UV RESISTANCE  
MILDEW RESISTANT

SIZE	A	B	C	D
ROPE DIAMETER	24-36 mm	40-48 mm	52-64 mm	68-80 mm
THICKNESS OF POLYESTER GUARD	1,5-2,0 mm	1,5-2,0 mm	1,5-2,0 mm	1,5-2,0 mm
STANDARD LENGTH	3,65 m	3,65 m	3,65 m	3,65 m

## CORDURA® GUARD



CORDURA® CHAFE GUARD IS A WOVEN PRODUCT THAT ARE KNOWN FOR THEIR DURABILITY AND RESISTANCE TO ABRASIONS, TEARS AND SCUFFS. CORDURA® IS A HIGH STRENGTH, CUT RESISTANT NYLON FABRIC THAT IS GREAT FOR ADDING ABRASION RESISTANCE TO MARINE ROPES USED IN TOUGH CONDITIONS. THIS PARTICULAR MATERIAL IS TWICE THE ABRASION RESISTANCE OF STANDARD NYLON AND THREE TIMES THE ABRASION RESISTANCE OF POLYESTER. IT IS AVAILABLE IN REMOVABLE VELCRO STRIP.

### SPECIFICATIONS

MATERIAL	100% HT CORDURA® FABRIC + VELCRO STRIP
COLOUR	BLACK
LENGTH	STANDARD LENGTH IS 3,65 METER

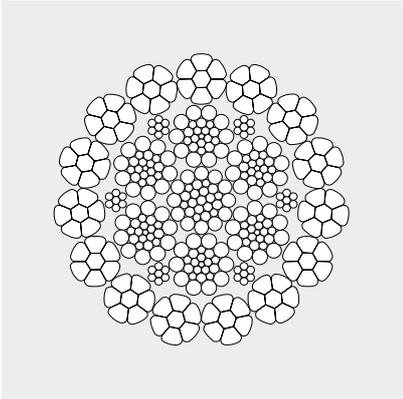
CUSTOM LENGTHS UPON REQUEST

### BENEFITS / FEATURES

VERY GOOD ABRASION RESISTANCE  
VERY GOOD UV RESISTANCE  
MILDEW RESISTANT  
EASY TO INSTALL & REMOVE  
HIGH FLEXIBILITY

SIZE	A	B	C	D
ROPE DIAMETER	24-36 mm	40-48 mm	52-64 mm	68-80 mm
THICKNESS OF CORDURA® GUARD	1,5 mm	1,5 mm	1,5 mm	1,5 mm
STANDARD LENGTH	3,65 m	3,65 m	3,65 m	3,65 m

**PD B 50 - HOIST ROPES** **PFEIFER**



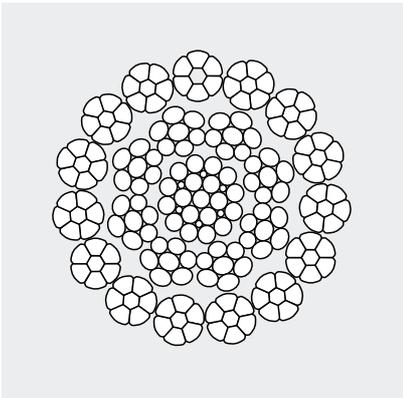
**APPLICATIONS**  
HOIST ROPES FOR CONTAINER DECK CRANES

SPECIFICATIONS	
AVERAGE FILL FACTOR	0,7145
AVERAGE SPINNING LOSS FACTOR 1770 N/mm <sup>2</sup>	0,8350
AVERAGE SPINNING LOSS FACTOR 1960 N/mm <sup>2</sup>	0,8350
AVERAGE SPINNING LOSS FACTOR 2160 N/mm <sup>2</sup>	0,8150
CORE	STEEL CORE (IWRC OR WSC)
LAY TYPE	ORDINARY LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	STRANDS COMPACTED - THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	105
ROPE CATEGORY NUMBER RCN	23-2

NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)		
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>	2160 N/mm <sup>2</sup>
25	301,0	512,0	569,0	611,0
26	325,0	554,0	616,0	661,0
28	383,0	652,0	725,0	778,0
30	434,0	740,0	822,0	883,0
32	495,0	844,0	937,0	1006,0
34	559,0	952,0	1058,0	1136,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

**PD C 55 - HOIST ROPES** **PFEIFER**



**APPLICATIONS**  
HOIST ROPES FOR CONTAINER DECK CRANES

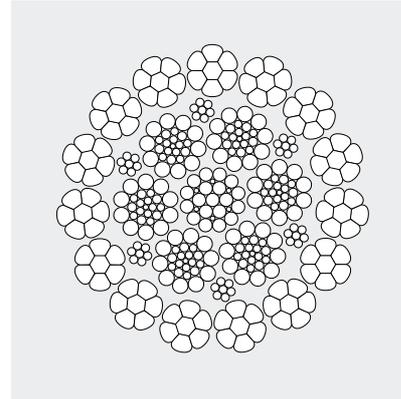
SPECIFICATIONS	
AVERAGE FILL FACTOR	0,7145
AVERAGE SPINNING LOSS FACTOR	0,8350
CORE	STEEL CORE COMPACTED
LAY TYPE	LANGS LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	STRANDS COMPACTED - THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	105
ROPE CATEGORY NUMBER RCN	23-2

NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)	
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>
34	538,0	859,0	1058,0
36	635,0	1072,0	1191,0
40	783,0	1323,0	1471,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

**APPLICATIONS**  
HOIST ROPES FOR HEAVY-LIFT DECK CRANES

SPECIFICATIONS	
AVERAGE FILL FACTOR	0,7145
AVERAGE SPINNING LOSS FACTOR 1770 N/mm <sup>2</sup>	0,8350
AVERAGE SPINNING LOSS FACTOR 1960 N/mm <sup>2</sup>	0,8350
AVERAGE SPINNING LOSS FACTOR 2160 N/mm <sup>2</sup>	0,8150
CORE	STEEL CORE (IWRC OR WSC)
LAY TYPE	LANGS LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	STRANDS COMPACTED - THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	105
ROPE CATEGORY NUMBER RCN	23-2

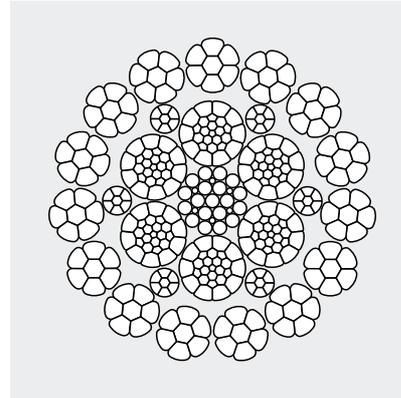


NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)		
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>	2160 N/mm <sup>2</sup>
40	777,0	1323,0	1471,0	1579,0
42	856,0	1459,0	1621,0	1741,0
44	940,0	1601,0	1780,0	1910,0
48	1118,0	1906,0	2117,0	2273,0
54	1415,0	2412,0	2681,0	2878,0
60	1747,0	2986,0	3307,0	3557,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

**APPLICATIONS**  
HOIST ROPES FOR HEAVY-LIFT DECK CRANES

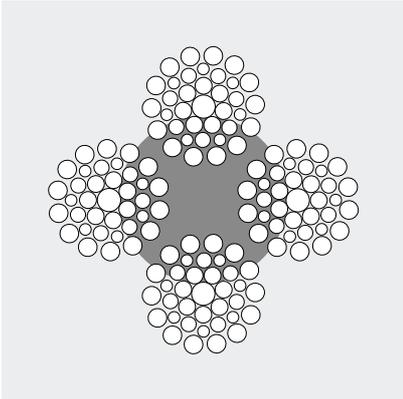
SPECIFICATIONS	
AVERAGE FILL FACTOR	0,7357
AVERAGE SPINNING LOSS FACTOR 1770 N/mm <sup>2</sup>	0,8450
AVERAGE SPINNING LOSS FACTOR 1960 N/mm <sup>2</sup>	0,8250
AVERAGE SPINNING LOSS FACTOR 2160 N/mm <sup>2</sup>	0,8250
CORE	STEEL CORE (IWRC OR WSC)
LAY TYPE	LANGS LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	STRANDS COMPACTED - THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	UP TO 49 mm 105 FROM 49mm 255
ROPE CATEGORY NUMBER RCN	UP TO 49 mm 23-2 FROM 49 mm 27



NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)		
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>	2160 N/mm <sup>2</sup>
40	799,0	1377,0	1530,0	1643,0
42	880,0	1518,0	1687,0	1812,0
44	966,0	1666,0	1851,0	1989,0
48	1149,0	1983,0	2203,0	2366,0
54	1455,0	2510,0	2788,0	2995,0
60	1796,0	3106,0	3440,0	3701,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

P 1104 - HOIST ROPES **PFEIFER**



**APPLICATIONS**

HOIST ROPES FOR BULKER DECK CRANES

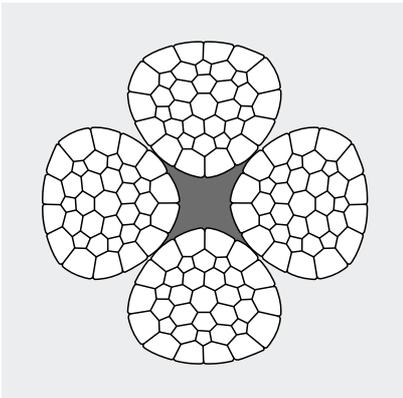
**SPECIFICATIONS**

AVERAGE FILL FACTOR	0,540
AVERAGE SPINNING LOSS FACTOR	0,840
CORE	FIBRE CORE (NFC OR SFC)
LAY TYPE	ORDINARY LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	NOT COMPACTED
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	144
ROPE CATEGORY NUMBER RCN	06

NOMINAL ROPE	WEIGHT APPROX.	MINIMUM BREAKING FORCE F (kN)
mm	kg/100 m	1960 N/mm <sup>2</sup>
32	396,0	723,0
34	429,0	805,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

PD SUPER 4 - HOIST ROPES **PFEIFER**



**APPLICATIONS**

HOIST ROPES FOR CONTAINER DECK CRANES

**SPECIFICATIONS**

AVERAGE FILL FACTOR	0,7208
AVERAGE SPINNING LOSS FACTOR 1770 N/mm <sup>2</sup>	0,8400
AVERAGE SPINNING LOSS FACTOR 1960 N/mm <sup>2</sup>	0,8400
AVERAGE SPINNING LOSS FACTOR 2160 N/mm <sup>2</sup>	0,8200
CORE	FIBRE CORE (NFC OR SFC)
LAY TYPE	ORDINARY LAY
LAY DIRECTION	RIGHT HAND
COMPACTING	STRANDS COMPACTED - THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	144
ROPE CATEGORY NUMBER RCN	22

NOMINAL ROPE	WEIGHT APPROX.	MINIMUM BREAKING FORCE F (kN)		
mm	kg/100 m	1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>	2160 N/mm <sup>2</sup>
30	442,0	762,0	847,0	909,0
32	498,0	859,0	955,0	1026,0

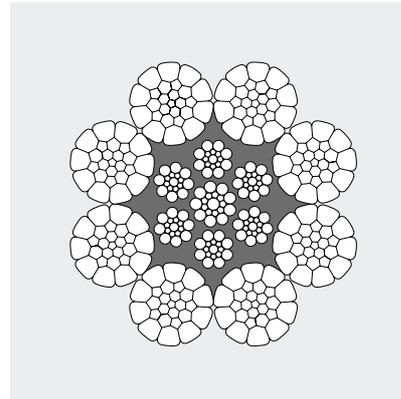
OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

**APPLICATIONS**  
LUFFING ROPES FOR SHIP DECK CRANES

SPECIFICATIONS	
AVERAGE FILL FACTOR	0,675
AVERAGE SPINNING LOSS FACTOR 1770 N/mm <sup>2</sup>	0,850
AVERAGE SPINNING LOSS FACTOR 1960 N/mm <sup>2</sup>	0,850
AVERAGE SPINNING LOSS FACTOR 2160 N/mm <sup>2</sup>	0,840
CORE	FULL PLASTIC IMPREGNATION OF THE STEEL CORE TO FURTHER EXTEND FATIGUE LIFE, IMPROVE STRUCTURAL STABILITY
LAY TYPE	ORDINARY LAY
LAY DIRECTION	CHOICE OF RIGHT HAND OR LEFT HAND
COMPACTING	STRANDS COMPACTED – THEREBY EXTRA WEAR RESISTANT
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	0 / +4,5%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	UP TO 13 mm 152 FROM 14 mm 208
ROPE CATEGORY NUMBER RCN	UP TO 14 mm 152 FROM 9 mm 200

NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)		
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>	2160 N/mm <sup>2</sup>
24	272,0	459,0	509,0	554,0
26	319,0	539,0	597,0	650,0
28	370,0	626,0	693,0	754,0
30	425,0	718,0	911,0	866,0
32	487,0	823,0	795,0	992,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY

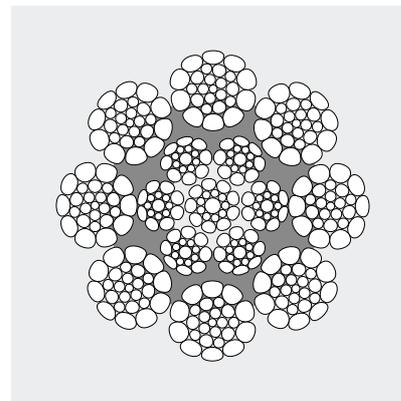


**APPLICATIONS**  
LUFFING ROPES FOR SHIP DECK CRANES

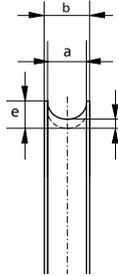
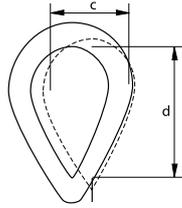
SPECIFICATIONS	
AVERAGE FILL FACTOR	0,660
AVERAGE SPINNING LOSS FACTOR	0,852
CORE	FULL PLASTIC IMPREGNATION OF THE STEEL CORE TO FURTHER EXTEND FATIGUE LIFE, IMPROVE STRUCTURAL STABILITY
LAY TYPE	CHOICE OF REGULAR/ORDINARY LAY OR LANGS LAY
COMPACTING	COMPACTED – EXCELLENT RESISTANCE TO CRUSHING AND ABRASION
FINISH	CHOICE OF BRIGHT OR GALVANISED
ROPE DIAMETER TOLERANCE	+2%/+4%
NUMBER OF LOAD BEARING WIRES WITHIN THE OUTER STRANDS	208
ROPE CATEGORY NUMBER RCN	09

NOMINAL ROPE mm	WEIGHT APPROX. kg/100 m	MINIMUM BREAKING FORCE F (kN)	
		1770 N/mm <sup>2</sup>	1960 N/mm <sup>2</sup>
24	269,0	516,0	560,0
26	315,0	606,0	657,0
28	365,0	701,0	761,0
30	412,0	805,0	874,0
32	472,0	917,0	995,0
34	532,0	1035,0	1124,0

OTHER ROPE DIAMETERS AND CONSTRUCTIONS ON ENQUIRY.



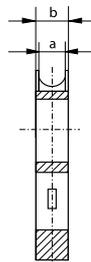
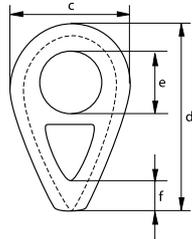
**THIMBLES (GENERALLY TO DIN 3090)**



SPECIFICATIONS	
<b>MATERIAL</b>	MILD STEEL
<b>STANDARD</b>	GENERALLY TO DIN 3090
<b>FINISH</b>	FOR DIAMETER 4 AND 6 MM ELECTRO-GALVANIZED OTHER DIAMETERS HOT DIPPED GALVANIZED
<b>CERTIFICATION</b>	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

DIA WIRE ROPE	WIDTH GROOVE	WIDTH OVERALL	WIDTH INSIDE	LENGTH INSIDE	THICKNESS	THICKNESS BACK	WEIGHT PER 100 pcs
mm	a	b	c	d	e	f	kg
4	5	9	10	20	5.1	2.1	1.4
6	6	12	15	30	7.1	2.6	3
8	9	13	20	40	11	4	7.1
10	11	16	25	50	14	5	17
12	13	19	30	60	16	6	24
14	16	22	35	70	17	7	36
16	18	25	40	80	19	8	50
18	20	27	45	90	21	9	62
20	22	32	50	100	23	10	90
22	24	33	55	110	24	10	100
24	26	37	60	120	27	11	130
26	29	46	65	130	30	12	220
28	31	50	70	140	33	12	240
32	35	55	80	160	38	14	270
36	40	60	90	180	42	16	430
40	44	65	100	200	46	18	570

**THIMBLES (ACCORDING TO DIN 3091)**



SPECIFICATIONS	
<b>MATERIAL</b>	CAST MILD STEEL, (GTW 40)
<b>STANDARD</b>	ACCORDING TO DIN 3091
<b>FINISH</b>	SELF COLOURED
<b>CERTIFICATION</b>	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

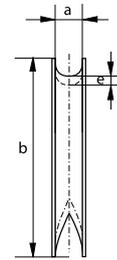
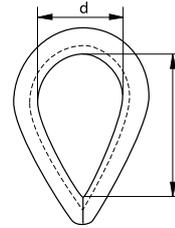
DIA ROPE	WIDTH GROOVE	WIDTH OVERALL	WIDTH	LENGTH	DIAMETER	LENGTH	WEIGHT PER 100 pcs
mm	a	b	c	d	e	f	kg
8	9	15	40	66	14	-	18
10	11	17.5	50	607	18	-	32
12	13	20	60	607	21	-	52
14	16	23.5	70	607	25	-	80
16	18	26	80	607	28	16	90
18	20	28.5	90	607	31	18	121
20	22	31	100	607	35	607	161
22	24	33.5	110	607	38	607	211
24	26	36	120	607	41	607	271
26	29	39.5	130	607	44	607	355
28	31	42	140	607	47	607	420
32	35	47	160	607	53	607	630
36	40	53	180	607	59	607	884
40	44	58	200	607	65	607	1100
44	48	63	220	607	70	607	1500
48	53	69	240	607	76	607	2000

## THIMBLES (GENERALLY TO DIN 6899 -B)

### SPECIFICATIONS

<b>MATERIAL</b>	MILD STEEL
<b>STANDARD</b>	GENERALLY TO DIN 6899 (B)
<b>FINISH</b>	THIMBLES FOR ROPE DIAMETERS UP TO AND INCLUDING 6 MM ARE ELECTRO-GALVANIZED, OTHER DIAMETERS ARE HOT DIPPED GALVANIZED
<b>CERTIFICATION</b>	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

DIA ROPE	WIDTH GROOVE	LENGTH	LENGTH INSIDE	WIDTH INSIDE	THICKNESS BACK	WEIGHT PER 100 pcs
mm	a	b	c	d	e	kg
	mm	mm	mm	mm	mm	
6	7	44	28	18	2.4	1.9
7	8	51	32	20	2.8	2.7
9	10	57	38	24	3.1	4.1
11	12	64	45	28	3.3	6.9
13	13	70	48	30	3.3	7.6
13	14	76	51	32	3.7	9.2
15	16	83	58	36	3.8	16.4
16	17	89	61	38	4.7	19
17	18	95	64	40	4.7	20.3
18	20	102	72	45	5.7	27.3
20	22	114	80	50	5.7	28.6
22	24	127	90	56	6.5	44.8
24	26	140	99	62	6.8	57.7
26	28	152	112	70	8	72
28	30	165	120	75	8	104
30	32	178	128	80	8	115

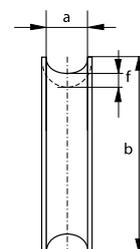
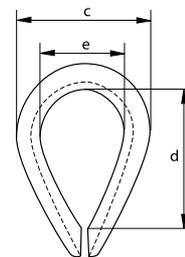


## THIMBLES (GENERALLY TO US FED. SPEC. FF-T-276B TYPE III)

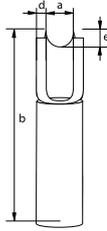
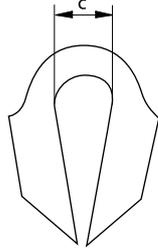
### SPECIFICATIONS

<b>MATERIAL</b>	MILD STEEL
<b>STANDARD</b>	GENERALLY TO US FEDERAL SPECIFICATION FF-T-276B TYPE III
<b>FINISH</b>	HOT DIPPED GALVANIZED
<b>CERTIFICATION</b>	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

DIA WIRE ROPE	WIDTH GROOVE	WIDTH OVERALL	WIDTH INSIDE	LENGTH INSIDE	THICKNESS	THICKNESS BACK	WEIGHT PER 100 pcs
mm	a	b	c	d	e	f	kg
	mm	mm	mm	mm	mm	mm	
6	7	55.5	38	41	22	1.6	3.4
8	9	63.5	46	47.5	27	2	6.3
9	10	73	54	54	28.5	2.8	11.3
11	12	82.5	60	60	32	3.2	16.2
13	13.5	92	70	70	38	3.6	23
14	15	92	68	70	38	3.6	23
16	16.5	108	79	82.5	44.5	4	33.8
19	20	127	97	95	51	5.5	66.2
22	24	140	108	108	57	5.5	83.3
25	27	156	125	114	63.5	6.3	135
28-32	30	178	149	130	73	6.3	185
32-35	33	205	173	159	89	12.7	375
35-38	36.5	229	181	165	89	12.7	540
41	43.5	286	206	203	102	12.7	731
45	47	310	216	229	114	12.7	810
48-51	50	384	264	305	152	12.7	1170



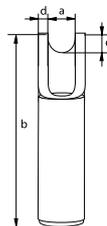
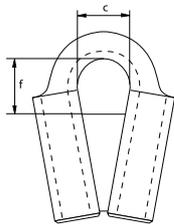
**THIMBLES (TUBULAR TYPE)**



SPECIFICATIONS	
MATERIAL	MILD STEEL
STANDARD	-
FINISH	PAINTED
CERTIFICATION	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

DIA WIRE ROPE	DIA	LENGTH	WIDTH INSIDE	THICKNESS	HEIGHT	WEIGHT EACH
mm	a	b	c	d	e	kg
10	12	90	23	4	8	0.25
12	15	105	27	5	10	0.42
14	17	115	27	5	10	0.5
16	19	120	32	5	12	0.6
18	22	140	35	5	15	0.75
22	25	180	45	6	16	1.4
24	28	180	45	7	16	1.75
26	30	195	47	7	18	2
32	35	215	60	7	22	2.4
36	40	212	70	9	36	3
38	45	260	70	7	27	3.3
44	50	280	75	7	28	4.06

**THIMBLES (TUBULAR TYPE, WITH WELDED PLATE)**



SPECIFICATIONS	
MATERIAL	CAST MILD STEEL, (GTW 40)
STANDARD	-
FINISH	SELF COLOURED
CERTIFICATION	A WORKS CERTIFICATE CAN BE SUPPLIED UPON REQUEST
<b>LARGER DIAMETER UPON REQUEST</b>	

DIA WIRE ROPE	WIDTH GROOVE	LENGTH	WIDTH INSIDE	THICKNESS	HEIGHT	LENGTH INSIDE	WEIGHT EACH
mm	a	b	c	d	e	f	kg
10	12	84	23	4	8	24	0.26
12	15	95	27	5	10	31	0.42
14	17	100	27	5	10	38	0.48
16	19	112	32	5	12	46	0.61
18	22	125	35	5	15	47	0.95
22	25	150	45	6	16	61	1.33
24	28	157	45	7	16	56	1.67
26	30	170	47	7	18	68	1.97
32	35	190	60	7	22	73	2.43
36	40	212	70	9	26	80	4.32
38	45	228	70	7	27	94	3.67



APPLICATIONS

CONNECTION LINES

SEE PAGES 8-9

SPECIFICATIONS

MATERIAL	COATED DYNEEMA® SK 75/78
SPECIFIC GRAVITY	0,97 KG/DM³
CONSTRUCTION	12 STRAND BRAIDED
UV RESISTANCE	EXCELLENT
CHEMICAL RESISTANCE	EXCELLENT
MELTING POINT	147°C
CRITICAL TEMPERATURE	65°C
WORKING STRETCH	<1%
FIBER WATER ABSORPTION	NONE
WET ABRASION	EXCELLENT
DRY ABRASION	EXCELLENT
STANDARD	-
LENGTH	-

OTHER COLOURS & LARGER DIAMETERS UPON REQUEST

ART.NO	DIA (mm) (Ø)	WEIGHT (kg)	B.LOAD * (kgf)	TOTAL LENGTH IN CLOSED COND. cm
305	12	0,03	4.670	12,5
305	14	0,05	5.980	15,0
305	18	0,09	9.380	17,0
305	20	0,14	13.460	20,5
305	24	0,33	18.360	35,0
305	28	0,48	23.700	40,0
305	32	0,68	28.500	45,0
305	34	0,93	34.000	50,0
305	36	1,24	40.800	55,0
305	40	1,59	47.000	60,0
305	44	2,00	54.000	65,0
305	48	2,49	61.000	70,0
305	50	3,04	70.380	75,0
305	54	3,68	79.560	80,0
305	58	4,41	87.720	85,0
305	60	5,18	95.880	90,0
305	64	6,06	106.080	95,0
305	68	7,05	115.260	100,0
207	72	8,54	124.400	110,0

\*BREAK LOAD (ALL TESTS ARE IN ACCORDANCE WITH ISO 2307)



305 DYNE K® SHACKLE



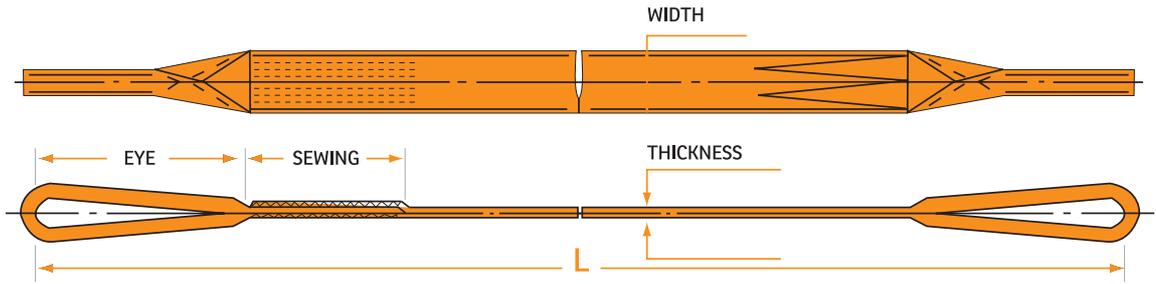
BENEFITS / FEATURES

- CAN BE OPENED AND CLOSED QUICKLY
- BUOYANT
- LIGHTWEIGHT
- FLEXIBLE
- SELF-LOCKING UNDER LOAD



Dyneema®

LE-1 BAND WEBBING SLING



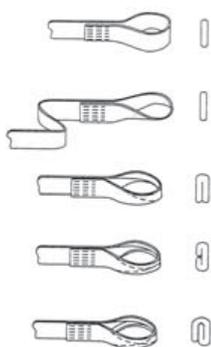
SPECIFICATIONS

MATERIAL	100% HT POLYESTER WEBBING
STANDARD	EN 1492-1+A1
SAFETY FACTOR	7:1

BENEFITS / FEATURES

- HIGH QUALITY PRODUCT WITH THE 7:1 SAFETY FACTOR
- PRODUCED FROM THE HIGH STRENGTH POLYESTER WEBBING
- VARIOUS SIZES AVAILABLE FOR EVERY APPLICATION
- NOT SLIPPERY
- HIGH RESISTANCE TO CHEMICAL AND OIL CONTAMINATION
- CUSTOM MADE SLINGS FOR SPECIFIC APPLICATIONS MAY BE MADE TO CUSTOMER SPECIFICATIONS
- VARIOUS COLOUR ARE AVAILABLE
- OUR BAND WEBBING SLINGS ARE SOLD WITH HOOK BRAND
- HOOK® IS THE REGISTERED BRAND NAME OF KAYA GROUP

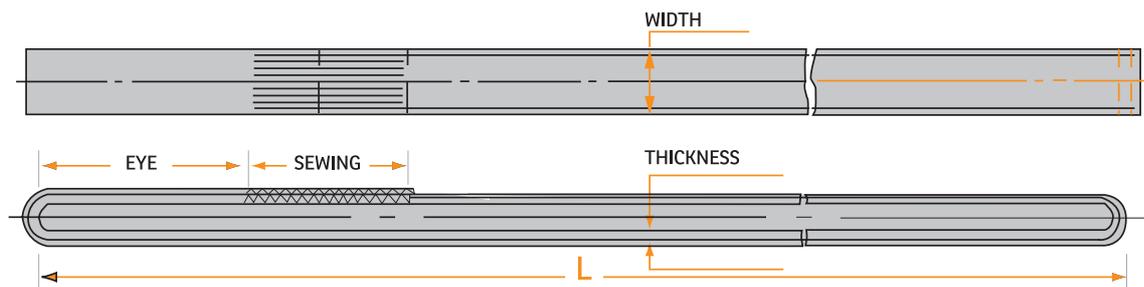
	WITH (mm)	WORKING LOAD (kg 100 %)	WORKING LOAD (kg 80 %)	WORKING LOAD (kg 200 %)	ANGLE (0-45°) WORKING LOAD (kg)	ANGLE (45-60°) WORKING LOAD (kg)	BREAKING LOAD (kg)	WORKING LOAD (kg)	LENGTH (m)
VIOLET	30-50	1000	800	2000	1400	1000	7000	1000	1-10
GREEN	70	2000	1600	4000	2800	2000	14000	2000	2-10
YELLOW	90	3000	2400	6000	4200	3000	21000	3000	2-10
GREY	120	4000	3200	8000	5600	4000	28000	4000	4-10
RED	150	5000	4000	10000	7000	5000	35000	5000	4-10
BROWN	180	6000	4800	12000	8400	6000	42000	6000	4-10
BLUE	250	8000	6400	16000	11200	8000	56000	8000	5-10
ORANGE	300	10000	8000	20000	14000	10000	70000	10000	5-10



1. FLAT EYE
2. REVERSED EYE
3. FOLDED EYE 1/2 WIDTH FROM 1 SIDE
4. FOLDED EYE 1/2 WIDTH FROM 2 SIDES
5. FOLDED EYE 1/3 WIDTH

U	0° 100%	△	60° 85%
△	30° 95%	△	90° 70%
△	45° 90%	△	120° 50%

## LE-2 ROUND WEBBING SLING



### SPECIFICATIONS

<b>MATERIAL</b>	100% HT POLYESTER WEBBING
<b>STANDARD</b>	EN 1492-2+A1
<b>SAFETY FACTOR</b>	7:1

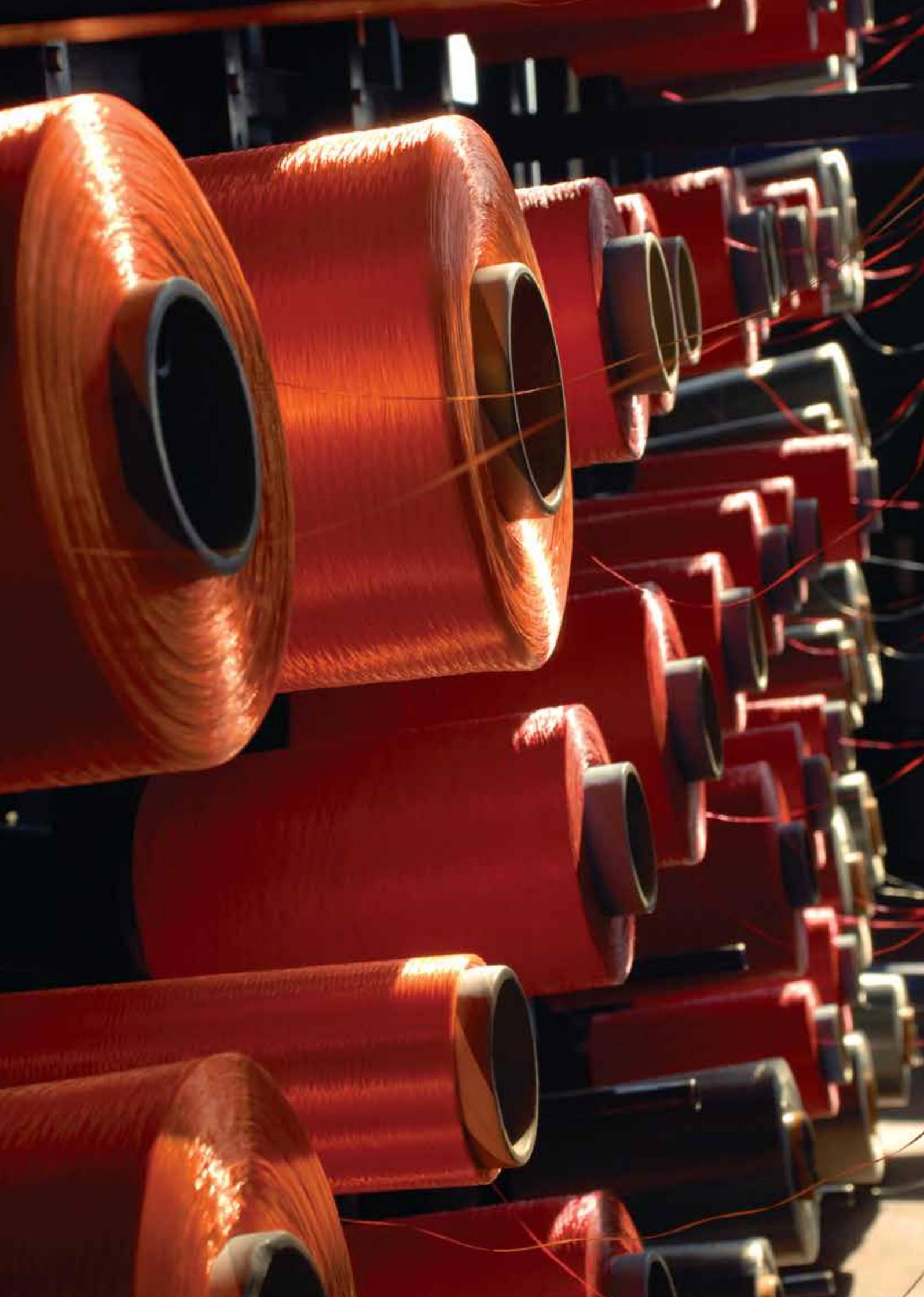
### BENEFITS / FEATURES

- HIGH QUALITY PRODUCT WITH THE 7:1 SAFETY FACTOR
- PRODUCED FROM THE HIGH STRENGTH POLYESTER WEBBING
- VARIOUS SIZES AVAILABLE FOR EVERY APPLICATION
- NOT SLIPPERY
- HIGH RESISTANCE TO CHEMICAL AND OIL CONTAMINATION
- CUSTOM MADE SLINGS FOR SPECIFIC APPLICATIONS MAY BE MADE TO CUSTOMER SPECIFICATIONS
- VARIOUS COLOUR ARE AVAILABLE
- OUR BAND WEBBING SLINGS ARE SOLD WITH HOOK BRAND
- HOOK® IS THE REGISTERED BRAND NAME OF KAYA GROUP



									
	WITH (mm)	WORKING LOAD (kg 100 %)	WORKING LOAD (kg 80 %)	WORKING LOAD (kg 200 %)	ANGLE (0-45°) WORKING LOAD (kg)	ANGLE (45-60°) WORKING LOAD (kg)	BREAKING LOAD (kg)	WORKING LOAD (kg)	LENGTH (m)
VIOLET	25	1000	800	2000	1400	1000	7000	1000	1-10
GREEN	50	2000	1600	4000	2800	2000	14000	2000	2-10
YELLOW	75	3000	2400	6000	4200	3000	21000	3000	2-10
GREY	100	4000	3200	8000	5600	4000	28000	4000	4-10
RED	125	5000	4000	10000	7000	5000	35000	5000	4-10
BROWN	150	6000	4800	12000	8400	6000	42000	6000	4-10
BLUE	200	8000	6400	16000	11200	8000	56000	8000	5-10
ORANGE	250	10000	8000	20000	14000	10000	70000	10000	5-10

	0° 100%		60° 85%
	30° 95%		90° 70%
	45° 90%		120° 50%



## ***TECHNICAL APPENDIX***

**OVERVIEW PROPERTIES**

FIBERS	POLYAMIDE 6 & 6.6 (PA)	POLYESTER (PES)	POLYPROPYLENE MULTIFILAMENT (PP)	POLYPROPYLENE (HIGH TENACITY) (HTPP)
BRAND NAME	NYLON® PERLON® ENKALON®	DIOLEN® TREVERIA® DACRON®	HOSTALEN® SOFTLENE® LEOLENE®	LEOLENE® AROVA® BETELON®
TENACITY OF YARN (CN/DTEX)	7-9	7-9	APP.6	APP.8
SPECIFIC GRAVITY (KG/DM³)	1,14	1,38	0,91	0,91
REDUCTION IN TENACITY WHEN WET (%)	10-15	0	0	0
WATER ABSORPTION (%)	1-7	0,5-2	0	0
KNOT STABILITY (%)	60-65	55-60	55-65	55-65
UV RESISTANCE	VERY GOOD	EXCELLENT	GOOD ONLY WHEN TREAT	GOOD ONLY WHEN TREAT
BREAKING STRETCH (%)	14-28	10-18	14-17	15-16
CREEP	SLIGHT CREEP UNDER LOAD	HARDLY MEASURABLE	CREEPS AT HIGH LOADS	CREEPS AT HIGH LOADS
RESISTANCE TO ABRASION	EXCELLENT	EXCELLENT	SUFFICIENT	SUFFICIENT
WASHING TEMPERATURE (°C)	50-60	50-60	30	30
RESISTANCE TO ACIDS (%)	GOOD	GOOD	VERY GOOD	VERY GOOD
RESISTANCE TO PETROLEUM BASED PRODUCTS	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
RESISTANCE TO SOLVENTS	FORMIC ACID & ACETIC ACID AT HIGH TEMPERATURE	PHENOLS, CRESOLS ZINC CHLORIDE	MINIMAL REACTION	MINIMAL REACTION
RESISTANCE TO ALKALI	GOOD RESISTANT AGAINST WEAK SOLUTIONS	GOOD AT ROOM TEMPERATURE	GOOD RESISTANT AGAINST WEAK SOLUTIONS	GOOD RESISTANT AGAINST WEAK SOLUTIONS
INSULATING PROPERTIES	VERY GOOD	VERY GOOD	EXCELLENT	EXCELLENT
HIGHEST TEMPERATURE (°C)	130	170	80	80
MELTING POINT (°C)	218	256	165	165

**CHEMICAL RESISTANCE**

CHEMICALS	TEST CONDITIONS			RESIDUAL STRENGTH				
	CONCENTRATION	TEMPERATURE	EXPOSURE	TYPE OF FIBRE				
	CHEMICAL TO WATER %	DEG °C	HOURS	POLYAMIDE	POLYESTER	POLYPROPYLENE	ARAMID	HMPE
<b>ACIDS</b>								
HYDROCHLORIC	34%	20°C	100	0%	70%	100%	95%	100%
NITRIC	66%	20°C	100	0%	100%	100%	95%	95%
SULPHURIC	96%	20°C	100	0%	100%	100%	40%	90%
FORMIC	90%	20°C	100	0%	95%	100%	90%	100%
ACETIC	100%	20°C	10	85%	95%	100%	100%	100%
<b>ALKALIS</b>								
CAUSTIC SODA	40%	20°C	100	50%	0%	90%	90%	100%
CAUSTIC SODA	20%	70°C	150	100%	0%	100%	85%	90%
CAUSTIC POTASH	40%	20°C	100	90%	0%	90%	90%	100%
<b>SOLVENTS</b>								
TRICHLOROETHYLENE	100%	30°C	150	100%	95%	80%	100%	100%
CARBON TETRACHLORIDE	100%	20°C	150	100%	100%	100%	98%	100%
BENZENE	100%	70°C	150	100%	100%	100%	98%	95%
METACRESOL	100%	100°C	40	0%	0%	100%	80%	100%
<b>OXIDISING AGENTS</b>								
HYDROGEN PEROXIDE	10%	20°C	100	0%	100%	90%	95%	100%

THIS TABLE SHOWS THE RESIDUAL STRENGTHS OF SYNTHETIC FIBRES AFTER CHEMICAL EXPOSURE UNDER SPECIFIC CONDITIONS.

## OVERVIEW PROPERTIES

POLYETHYLENE (PE)	HIGH MODULUS POLYETHYLENE (UHMWPE)	ARAMID	LIQUID CRYSTAL POLYMER (LCP)	POLYBENZOXAZOLE (PBO)	
LUPOLEN® WETALEN®	DYNEEMA® SPECTRA®	TWARON® TECHNORA® KEVLAR® HERACRON®	VECTRAN®	ZYLON®	BRAND NAME
APP.4,5	35	20-25	20	37	TENACITY OF YARN (CN/DTEX)
0,95	0,97	1,44	1,40	1,52	SPECIFIC GRAVITY (KG/DM³)
0	0	0	0	0	REDUCTION IN TENACITY WHEN WET (%)
0	0	2-5	1	0,6	WATER ABSORPTION (%)
50-60	35-50	30-35	30-50	35-55	KNOT STABILITY (%)
GOOD	EXCELLENT	POOR	POOR	POOR	UV RESISTANCE
10-19	3,8	3,4	3,3	2,8	BREAKING STRETCH (%)
CREEPS AT HIGH LOADS	CREEPS AT HIGH LOADS	HARDLY MEASURABLE	IMMEASURABLE	IMMEASURABLE	CREEP
SUFFICIENT	VERY GOOD	UNSATISFACTORY	GOOD	UNSATISFACTORY	RESISTANCE TO ABRASION
30	30	80-90	60	50	WASHING TEMPERATURE (°C)
EXCELLENT	EXCELLENT	PARTIALLY GOOD RESISTANCE	EXCELLENT	GOOD	RESISTANCE TO ACIDS (%)
EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	RESISTANCE TO PETROLEUM BASED PRODUCTS
MINIMAL REACTION	MINIMAL REACTION	MINIMAL REACTION	MINIMAL REACTION	MINIMAL REACTION	RESISTANCE TO SOLVENTS
EXCELLENT	EXCELLENT	PARTIALLY GOOD	VERY GOOD	VERY GOOD	RESISTANCE TO ALKALI
EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	INSULATING PROPERTIES
70	70	350	200	500	HIGHEST TEMPERATURE (°C)

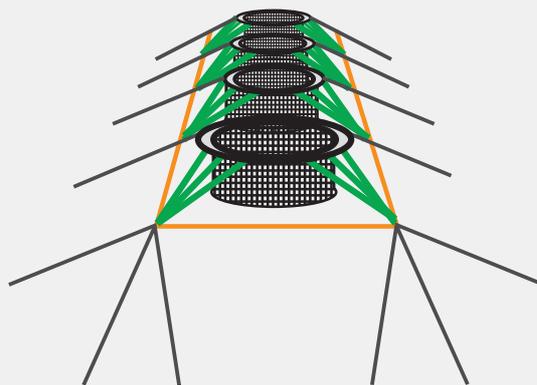
## TYPICAL CHARACTERISTIC OF MATERIALS

MATERIALS	SPECIFIC GRAVITY	SPECIFIC MODULUS N/TEX	SPECIFIC STRENGTH N/TEX	DYNAMIC COEFFICIENT OF FRICTION AGAINST METAL	MELTING POINT °C	OTHER CHARACTERISTIC
POLYESTER	1,38	10	0,84	0,12 - 0,15	256	EXCELLENT WET INTERNAL ABRASION RESISTANCE
POLYAMIDE	1,14	4	0,84	0,10 - 0,12	218	10-15% WET STRENGTH LOSS. FAIR WET INTERNAL ABRASION RESISTANCE
POLYPROPYLENE	0,91	8	0,73	0,15 - 0,22	165	LOW STRENGTH. FLOAT ON WATER
POLYPROPYLENE/ POLYETHYLENE (MIXED POLYOLEFIN)	0,92-0,94	9	0,84	0,10 - 0,15	140	BETTER ABRASION RESISTANCE THAN POLYPROPYLENE. FLOAT ON WATER
POLYESTER/POLYOLEFIN DUAL FIBRES	0,99-1,14	10	0,80	0,10 - 0,15	256 - 140	VERY GOOD WET/DRY ABRASION RESISTANCE.
POLYAMIDE MONO AND FIBRE MIXTURE	0,98-1,14	4	0,84	0,10 - 0,12	165 - 218	GOOD ABRASION RESISTANCE FOR USE ON WINCHES
POLYESTER/POLYPROPYLENE MELT MIXTURE	0,99	8	0,80	0,12 - 0,15	173	STRONGER THAN POLYPROPYLENE. FLOAT ON WATER
ARAMID	1,44	49	2,03	0,15	500	POTENTIAL AXIAL COMPRESSION FATIGUE PROBLEMS, BUT THESE CAN BE OVERCOME. LONG TENSION-TENSION FATIGUE LIFE
LCP (LIQUID CRYSTAL POLYMER)	1,40	60	2,40	0,13	300	HIGH STRENGTH AND LOW STRETCH. LONG TERM DURABILITY TO FATIGUE
UHMWPE (HIGH MODULUS POLYETHYLENE)	0,97	110	3,50	0,07	147	LOW MELTING POINT. FLOAT ON WATER. LONG TENSION-TENSION FATIGUE LIFE
STEEL WIRE	7,85	26	0,18	0,23	1600	CORRODES. HEAVY. MODERATE TENSION-TENSION FATIGUE LIFE.

**SUGGESTED MOORING ROPES FOR VARIOUS CLASSES OF VESSELS**

PASSANGER VESSELS , RO-RO, CAR-CONTANIER CARRIERS		DYNE® K	TANKER ROPE	LUPP® HIGH TENACITY SQUARE	PP NORMAL	LUPA® SQUARE
Ø						
DWT	3.-5.000 DWT	22	44	48	56	44
	5.-12.000 DWT	24	48	52	60	48
	12.-25.000 DWT	26	52	56	64	52
	25.-40.000 DWT	28	56	60	72	56
	40.-80.000 DWT	32	60	64	76	60
	ABOVE 80.000 DWT	36	64	68	80	64
BULKCARRIERS , TANKERS		DYNE® K	TANKER ROPE	LUPP® HIGH TENACITY SQUARE	PP NORMAL	LUPA® SQUARE
Ø						
DWT	5.-10.000 DWT	24	44	48	56	44
	10.-20.000 DWT	26	48	52	60	48
	20.-40.000 DWT	32	52	56	64	52
	40.-80.000 DWT	36	56	60	72	56
	80.-150.000 DWT	38	60	64	76	60
	150.-250.000 DWT	40	64	68	80	64
	ABOVE 250.000 DWT	44	68	72	88	68

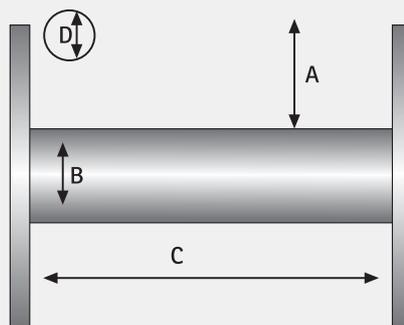
**SUGGESTED MOORING & ANCHOR LINE FISH FARMING**



- Ø20 MM – Ø36 MM  
LUPA® TWIST  
(SINKING) POLYAMIDE FIBER
- Ø36 MM – Ø40 MM  
LUPA® TWIST  
(SINKING) POLYAMIDE FIBER
- Ø40 MM – Ø56 MM  
LUPP® HIGH TENACITY SQUARE  
(FLOATING) POLYOLEFIN FIBER

NOTE: ROPE DIAMETERS MENTIONED ABOVE CHANGE ACCORDING TO SIZE OF FISHFARMS. THEREFORE, MINIMUM AND MAXIMUM VALUES ARE USED.

**ROPE LENGTH ACCORDING TO DIAMETER & REEL SIZE**



ROPES LENGTH (METER) : 
$$\frac{(A+B) \cdot A \cdot C \cdot \pi \cdot 10^6}{D^2}$$

A,B,C: (METER) : D: (MM)

## CONVERSION TABLE

TO CONVERT		MULTIPLY BY	TO CONVERT		MULTIPLY BY
<b>WEIGHT</b>	POUNDS TO GRAMS	453592	GRAMS TO POUNDS	0,002205	
	POUNDS TO KILOGRAMS	0,4536	KILOGRAMS TO POUNDS	2,20462	
	TONS TO KILOGRAMS	1016,05	KILOGRAMS TO TONS	0,0009842	
	POUNDS TO OUNCES	16	OUNCES TO POUNDS	0,0625	
	POUNDS / 100 FEET TO GRAMS / METERS	14,8816394	GRAMS / METERS TO POUNDS / 100 FEET	67,0969	
<b>STRENGTH</b>	KILOGRAMS TO KILONEWTONS	0,0098	KILONEWTONS TO KILOGRAMS	101.972	
	TONS TO NEWTONS	9810	NEWTONS TO TONS	0,000102	
<b>LENGTH</b>	INCHES TO MILIMETRES	25,40	MILIMETERS TO INCHES	0,03937	
	FEET TO METRES	0,3048	METRES TO FEET	3,208	
	FEET TO INCHES	12	INCHES TO FEET	0,833	
	YARDS TO METRES	0,9144	METRES TO YARDS	1,0936	
	YARDS TO FEET	3	FEET TO YARDS	0,3333	
	MILES TO KILOMETRES	1,6093	KILOMETRES TO MILES	0,6214	
	CIRC. INCHES TO DIAMETRE MILIMETERS	8	DIAMETRE MILIMETERS TO CIRC. INCHES	0,125	
<b>AREA</b>	SQUARE FEET TO SQUARE METRES	0,0929	SQUARE METRES TO SQUARE FEET	10,7639	
	SQUARE YARDS TO SQUARE METRE	0,8361	SQUARE METRES TO SQUARE YARDS	1,1960	
<b>VOLUME</b>	GALLONS TO LITRES	4546	LITRES TO GALLONS	0,22	
<b>TEX-SYSTEM</b>	DENIER	WT. IN G/9000 M	TEX TO DTEX	10	
	TEX	WT. IN G/1000 M	DEN TO TEX	0,1111	
	DTEX	WT. IN G/10.000 M	CN/DTEX	GR/DEN	



**WIRE ROPE GENERAL INFORMATION**

**WIRE ROPES DESIGN**

**STANDARD CONSTRUCTION**

6 x36 IWRC



**⚠ WARNING: NEVER USE A SWIVEL! FAILURE MAY CAUSE SERIOUS INJURY OR DEATH!**

**ROTATION RESISTANT**



**⚠ WARNING: NEVER USE A SWIVEL! FAILURE MAY CAUSE SERIOUS INJURY OR DEATH!**

**HIGH PERFORMANCE ROTATION RESISTANT**

REGULAR LAY



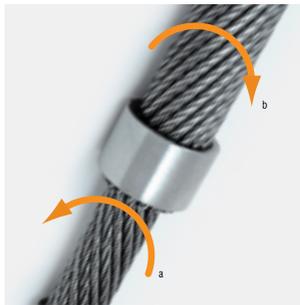
LANG'S LAY



PLASTIC COATED CORE



**ROTATIONAL PROPERTIES**

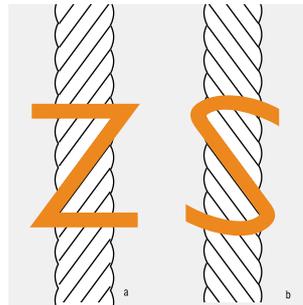


• DIFFERENT LEVELS OF TORQUE AND ROTATION WHEN LOADED, DEPENDING ON THE CRANE REQUIREMENTS:

• ROTATION RESISTANT: **2** SUITABLE FOR STANDARD SPOOLING APPLICATIONS

• HIGH PERFORMANCE ROTATION RESISTANT: **3 4 5** WHEN THE LOWEST LEVEL OF TORQUE IS REQUIRED – ON REQUEST WITH PLASTIC COATED CORE **5**

**DIRECTION OF LAY**



• "Z" OR "S" REFERRING TO THE DIRECTION OF THE HELIX OF THE OUTER STRANDS

• "RIGHT HAND" **a** FOR LEFT DRUM

• "LEFT HAND" **b** FOR RIGHT DRUM

**TYPE OF LAY**

- 1. REGULAR/CROSS: MORE RESISTANT TO PRESSURE AND DEFORMATION **2 3**
- 2. LANG'S LAY: IMPROVED ABRASION RESISTANT PROPERTIES ON MULTIPLE ROPE SPOOLING **4 5**

CONTAINER DECK CRANES



HEAVY-LIFT DECK CRANES



BULKER DECK CRANES



SHIP DECK CRANES



RESCUEBOAT AND LIFEBOAT



**PRODUCT SAFETY – PROTECT YOURSELF AND OTHERS! PLEASE CONSULT US ON PRODUCT SAFETY MATTERS – WORKING WITH WIRES REQUIRES SPECIAL CAUSE!**

**⚠ ALWAYS INSPECT WIRE ROPE BEFORE USE:**

- WEAR
- DAMAGES
- DEFORMATIONS
- CORROSION

**⚠ WARNING! WIRE ROPE WILL FAIL IF WORN-OUT, SHOCK LOADED, OVER-LOADED, MISUSED, DAMAGED, IMPROPERLY MAINTAINED OR ABUSED.**

**⚠ NEVER USE WIRE ROPE WHICH IS:**

- DAMAGED
- WORN-OUT
- DEFORMED
- IMPROPERLY MAINTAINED
- NOT SUITABLE

**⚠ IF IN DOUBT ABOUT THE WIRE ROPE, THE WIRE ROPE APPLICATION, THE WIRE ROPE END TERMINATION OR ANYTHING ELSE REGARDING THE WIRE ROPE, PLEASE CONTACT US OR THE MACHINE MANUFACTURER.**

## WIRE ROPE CARE – LUBRICATION

### WHEN SHOULD ROPES BE RELUBRICATED?

DEPENDENT ON EXTERNAL INFLUENCES LIKE CLIMATE, OPERATION, DIRT ETC. THE ROPE HAS TO BE RELUBRICATED IN REGULAR INTERVALS. THE CONDITION OF THE ROPE HAS TO BE CHECKED IN ORDER TO DETERMINE THE RIGHT PERIOD. IT IS RECOMMENDED TO RELUBRICATE THE ROPE BEFORE THE CRANE STARTS WITH A LONG TERM JOB.

### AMOUNT OF GREASE

THE AMOUNT OF GREASE IS DEPENDANT UPON THE ROPE CONSTRUCTION AND DIAMETER, BUT GENERALLY LESS GREASE IN SHORTER PERIODS IS OF ADVANTAGE. GENERAL RECOMMENDATION:

$$\text{AMOUNT [OZ]} = \frac{0.2 \text{ [OZ]} \cdot \text{ROPE LENGTH [FT]} \cdot \text{ROPE DIAMETER [mm]}}{300 \text{ [FT]} \cdot 10 \text{ [mm]}}$$

### DRYING TIME

THE EVAPORATION OF THE SOLVANT HAS TO BE CONSIDERED, WHICH DEPENDS OF THE AMBIENT TEMPERATURE.

### WHAT CRITERIA DETERMINES THE RIGHT RELUBRICANT?

THE AMOUNT OF GREASE IS DEPENDANT UPON THE ROPE CONSTRUCTION AND DIAMETER, BUT GENERALLY LESS GREASE IN SHORTER PERIODS IS OF ADVANTAGE. GENERAL RECOMMENDATION:

- TOLERANCE AND COMPATIBILITY WITH:      SPECIFICATIONS:
- ORIGINAL LUBRICANTS
  - MATERIAL OF SHEAVE BLOCKS
  - PENETRATION
  - APPLICABILITY
  - FLAME POINT
  - VISCOSITY

### THEREFORE, WE RECOMMEND:



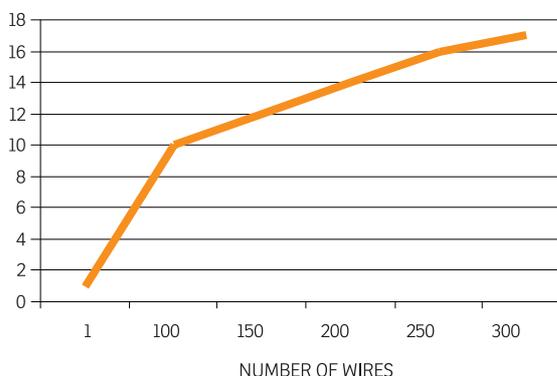
**IMPROVED LUBRICATION  
LESS FRICTION,  
HIGHER EFFICIENCY,  
ELONGATED LIFETIME**

### DOES RELUBRICATION HELP PREVENT CORROSION?

DUE TO THE HIGH NUMBER OF WIRES AND STRANDS THE SURFACES OF A WIRE ROPE IS MUCH BIGGER COMPARED TO A SINGLE ROD WITH THE SAME DIAMETER. THE BIGGER SURFACE MAKES ROPES UP TO 15 TIMES MORE VULNERABLE TO CORROSION THAN SOLID MATERIAL!

WHEN THE GREASE BETWEEN THE STRANDS GETS LOST, WATER CAN PENETRATE INTO THE ROPE AND MAY STAY INSIDE. WIND DRIES THE ROPE EXTERNALLY AND THE ROPE CAN LOOK UNCORRODED DESPITE INTERNAL CORROSION, WHICH IS NOT VISIBLE FROM OUTSIDE. THIS COULD POTENTIALLY CAUSE INTERNAL WIRE BREAKS AND THEREFORE DANGEROUS CONDITIONS.

SURFACE AREAS MULTIPLICATION FACTOR



### PFEIFER LUBRICANT FOR WIRE ROPES

TYPE	SIZE	PART-NUMBER
RL-S	12x600 ml SPRAY CAN	245066
RL-B	10 L BUCKET	212406
RL-B	30 L BUCKET	212405

STANDARDS	
STANDARDS OF ROPES	
<b>EN ISO 9554</b>	FIBRE ROPES - GENERAL SPECIFICATIONS
<b>EN ISO 1968</b>	FIBRE ROPES AND CORDAGE - VOCABULARY
<b>EN ISO 2307</b>	FIBRE ROPES - DETERMINATION OF CERTAIN PHYSICAL AND MECHANICAL PROPERTIES
<b>EN ISO 1140</b>	FIBRE ROPES - POLYAMIDE - 3, - 4, -8 AND - 12 STRAND ROPES
<b>EN ISO 1141</b>	FIBRE ROPES - POLYESTER - 3, - 4, -8 AND - 12 STRAND ROPES
<b>EN ISO 1346</b>	FIBER ROPES - POLYPROPYLENE - 3, - 4, -8 AND - 12 STRAND ROPES
<b>EN ISO 1181</b>	FIBRE ROPES - MANILA AND SISAL - 3,- 4 AND - 8 STRAND ROPES
<b>ISO 10547</b>	POLYESTER FIBRE ROPES - DOUBLE BRAID CONSTRUCTION
<b>ISO 10554</b>	POLYAMIDE FIBRE ROPES - DOUBLE BRAID CONSTRUCTION
<b>ISO 10572</b>	MIXED POLYOLEFIN FIBRE ROPES
<b>ISO 10325</b>	FIBRES ROPES - HIGH MODULUS POLYETHYLENE - 8 STRAND BRAIDED ROPES, 12 STRAND BRAIDED ROPES AND COVERED ROPES
<b>ISO 10556</b>	FIBRES ROPES OF POLYESTER/POLYOLEFIN DUAL FIBRES
<b>EN 1891</b>	PERSONEL PROTECTIVE EQUIPMENT FOR THE PREVENTION OF FALLS FROM A HEIGHT - LOW STRETCH KERNMANTEL ROPES
<b>EN 892</b>	MOUNTAINEERING EQUIPMENT - DYNAMIC MOUNTAINEERING ROPES - SAFETY REQUIREMENTS AND TEST METHODS
<b>EN 564</b>	MOUNTAINEERING EQUIPMENT - ACCESSORY CORD - SAFETY REQUIREMENTS AND TEST METHODS
STANDARDS OF ROPES	
<b>MIL-DTL 24050E</b>	POLYAMIDE FIBRE ROPES - DOUBLE BRAID CONSTRUCTION
STANDARDS OF SLINGS	
<b>EN 1492-1+A1</b>	TEXTILE SLINGS - SAFETY - PART 1: FLAT WOVEN WEBBING SLINGS, MADE OF MAN - MADE FIBERS FOR GENERAL PURPOSE USE
<b>EN 1492-2+A1</b>	TEXTILE SLINGS - SAFETY - PART 2 : ROUND SLINGS, MADE OF MAN - MADE FIBERS FOR GENERAL PURPOSE USE



KAYA IS HAVING CERTIFICATED ALL PPE PRODUCTS BY TÜV SÜD – GERMANY AND HAS CE QUALITY ASSURANCE SYSTEM CERTIFICATE ISSUED BY THE SAME NOTIFIED BODY ACCORDING TO ARTICLE 11, B, NO. 1(C) OF COUNCIL DIRECTIVE 89/686/EEC FOR PERSONAL PROTECTIVE EQUIPMENT.

BY THIS CERTIFICATE WHICH REQUIRES PERIODICAL SURVEILLANCE THE NOTIFIED BODY CERTIFIES THAT THE HOLDER OF THIS CERTIFICATE MAINTAINS QUALITY SYSTEM, WHICH ENSURES THAT THE PPE MANUFACTURED CONFORMS TO APPROVED MODEL.

FOR THE PRODUCTS WHICH ARE NOT PPE KAYA HAVE TYPE APPROVAL AND INSPECTION CERTIFICATES FROM GERMANISCHER LLOYD.

KAYA ALSO HAVE AN INTEGRATED MANAGEMENT SYSTEM CERTIFICATE ISSUED BY TÜV THÜRNGEN ACCORDING TO ISO 9001:2008 FOR QUALITY MANAGEMENT, ISO 14001:2004 FOR ENVIRONMENTAL MANAGEMENT AND BS OHSAS 18001:2007 FOR OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT.

KAYA TESTS ITS PRODUCTS IN ITS IN-HOUSE LABORATORY.

ALL KAYA PRODUCTS ARE INSURED AGAINST PRODUCTION DEFECTS BY "PRODUCT LIABILITY INSURANCE"







Clever Solutions since 1861

**AUGUST HERZOG**  
MASCHINENFABRIK GMBH & CO.KG  
AM ALEXANDERHAUS 160 26127  
OLDENBURG GERMANY  
**PHONE** : +49 (0)441 3008 0  
**FAX** : +49 (0)441 3008 100  
**E-MAIL** : INFO@HERZOG-ONLINE.COM  
**WWW.HERZOG-ONLINE.COM**



**GALAN TEXTILE MACHINERY S.L.**  
FRANCESC OLLER, 91 E-08225  
TERRASSA (BARCELONA) SPAIN  
**PHONE** : +34 93 733 65 50  
**FAX** : +34 93 788 40 40  
**E-MAIL** : GALAN@GALAN.ES  
**WWW.GALAN.ES**



**TWISTEchnology**  
CTRA. DE RUBI, KM 22. E-08228  
TERRASSA (BARCELONA) SPAIN  
**PHONE** : +34 937 894 100  
**FAX** : +34 937 894 355  
**E-MAIL** : INFO@TWISTEchnology.COM  
**WWW.TWISTEchnology.COM**



**ROBLON ENGINEERING**  
DK-9300 SAEBY DENMARK  
**PHONE** : +45 98 46 40 00  
**FAX** : +45 98 46 78 20  
**E-MAIL** : ENG@ROBLON.COM  
**WWW.ROBLON.COM**



**MP S.R.L.**  
VIA DELLE OROBIE, 189 - 24059  
URGNANO (BG)  
ITALY  
**PHONE** : +39 035891395  
**FAX** : +39 035892530  
**E-MAIL** : INFO@MP-ITALY.COM  
**WWW.MP-ITALY.COM**



**SIMA GROUP**  
VIA CHIESACCIA, 2  
40056 CREPELLANO (BO)  
ITALY  
**PHONE** : +39 0516505511  
**FAX** : +39 051739588  
**E-MAIL** : SIMAGROUP@SIMAGROUP.IT  
**WWW.SIMAGROUP.IT**



**ZWICK GMBH & CO. KG**  
AUGUST-NAGEL-STR. 11 D-89079 ULM  
GERMANY  
**PHONE** : +49 (0)7305 10 0  
**FAX** : +49 (0)7305 10 200  
**E-MAIL** : INFO@ZWICK.DE  
**WWW.ZWICK.DE**



**DSM DYNEEMA B.V.**  
6129 EL URMOND THE NETHERLANDS  
**PHONE** : +31 (0)46 4767989  
**FAX** : +31 (0)46 4767915  
**E-MAIL** : INFO.DYNEEMA@DSM.COM  
**WWW.DYNEEMA.COM**



The power of Aramid

**TEIJIN ARAMID B.V.**  
VELPERWEG 76 P.O. BOX 5153  
6802 ED ARNHEM THE NETHERLANDS  
**PHONE** : +31 0 88 26 89 159  
**FAX** : +31 0 88 26 89 179  
**E-MAIL** : ROPES\_CABLES@TEIJINARAMID.COM  
**WWW.TEIJINARAMID.COM**



**DUPONT TÜRKİYE KİMYASAL ÜRÜNLER  
SAN. VE TİC. A.Ş.**  
PALLADIUM TOWER İŞ MERKEZİ BARBAROS MAH.  
KARDELEN SOK. NO:2 KAT:11, ATAŞEHİR, 34746  
İSTANBUL, TÜRKİYE  
**PHONE** : +90 216 687 04 00  
**FAX** : +90 216 687 04 20  
**WWW.DUPONT.COM.TR**



**NEXIS FIBERS AG**  
GERLISWILSTRASSE 17  
6021 EMMENBRÜCKE  
SWITZERLAND  
**PHONE** : +41 (0)41 267 80 53  
**FAX** : +41 (0)41 267 92 16  
**WWW.NEXISFIBERS.COM**



**BARNET EUROPE**  
W. BARNET GMBH & CO. KG  
FREUNDERWEG 39 52068 AACHEN  
GERMANY  
**PHONE** : +49 241 579 80  
**FAX** : +49 241 579 827  
**E-MAIL** : SALES@BARNET-EUROPE.COM  
**WWW.BARNET-EUROPE.COM**



**I-COATS N.V.**  
I-COATS N.V. K. MERCIERLEI 29  
2600 BERCHEM  
BELGIUM  
**PHONE** : +32 3 281 73 03  
**FAX** : +32 3 281 73 04  
**E-MAIL** : KVG@I-COATS.BE  
**WWW.I-COATS.BE**

**KAYA YAPI İÇ. MİM. TAS. İNŞ. DEN.  
TAAH. SAN. VE TİC. A.Ş.**

**YÖNETİM VE ÜRETİM MERKEZİ**  
MANAGEMENT & PRODUCTION CENTER

GEBZE ORGANİZE SANAYİ BÖLGESİ  
1000. SOKAK NO:1015  
ÇAYIROVA, KOCAELİ, TURKEY

**KAYAGRUBU.COM.TR**

**SANTRAL/CENTRAL**  
T: +90 262 677 19 19 pbx  
F: +90 262 677 19 10

#### **KAYA ROPES**

GEBZE ORGANİZE SANAYİ BÖLGESİ  
1000. SOKAK NO: 1015  
ÇAYIROVA, KOCAELİ, TURKEY  
T: +90 262 677 19 03 pbx  
F: +90 262 677 19 01  
E-MAIL: INFO@KAYAROPES.COM

**KAYAROPES.COM**



 /KAYAROPES

 /COMPANY/KAYA-ROPES

 /KAYA\_ROPES

 /KAYAROPES

# UPGRADE YOUR LINES!