WIRECO
A World Ahead

OLIVEIRA

SPECIAL WIRE ROPES

Driving Progress around the World

Edition 07/2025

INTRODUCTION

WIRECO

Quality Products, Outstanding Service and Comprehensive Technical Support – It's what today's industries expect from their supplier partners. And that's what WireCo WorldGroup is all about.

WireCo WorldGroup is the global market, manufacturing and technical leader in wire and synthetic rope manufacturing, providing a consultative approach to offer customers a single, reliable source for performance matched solutions to fit their specific application and budget needs. But it doesn't stop there. WireCo WorldGroup offers clients the education and expertise needed to enhance product performance and value.

With our comprehensive range of trusted, global brands we deliver unmatched technical expertise and innovation as well as unparalleled quality assurance meeting and exceeding international quality certifications.

WireCo WorldGroup is on the ground everywhere you are - with manufacturing and distribution facilities all around the world and more than 4,000 global employees supporting these efforts. Our customers enjoy global availability for a consistent, responsive supply no matter where and when they need it.

OLIVEIRA

Already in the 6th generation Oliveira's goal is to provide valuable solutions to our customers. Our products meet the international standards and offer an excellent value to your application.

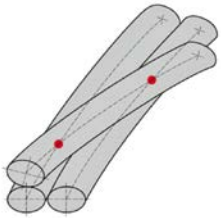
CONTENTS

GENERAL DEFINITIONS

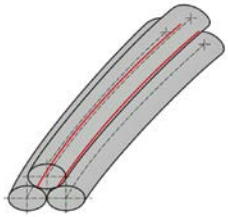
PARALLEL LAY ROPES

Parallel Construction

In a non parallel lay rope all wires and strands have different lay length. The high stress concentration at the crossover point leads to an early internal failure. In a parallel lay rope all wires and strands have the same lay length. The linear contact leads to an optimal stress distribution. Furthermore the compacted parallel design leads to a higher fill factor and breaking strength.

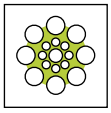


cross lay (non-parallel)
stress concentration



parallel lay
stress distribution

PPI - PLASTIC PROTECTED IMPREGNATION



PPI

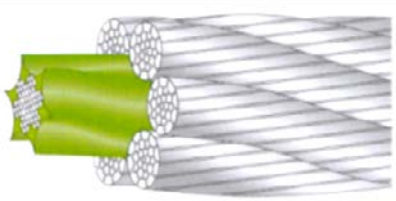
In consequence of being not only a steel wire rope producer but also a synthetic rope manufacturer, Oliveira has a strong and deep know-how of plastic and its applications. The PPI operation is applied during the Oliveira process in one continuous operation which guarantees a perfect impregnation and equal stress and tension of all the components. Resulting the plastic forms only small braces between the strands so they can keep their flexibility to give in to the relative movements within the rope.

Positive effects:

- Allows a homogeneous stress distribution in the rope
- Improves the structural stability
- Encapsulates the lubricant in the core
- Protects the core from corrosion

Resulting in:

- A longer service life
- Keeping its non rotational properties in the most severe conditions
- Internal rope protection against corrosive environment
- Favouring outer maintenance



SWIVEL USE

Swivel

No Swivel

Rotation resistant ropes can be used with a swivel.
All other rope constructions may not be used with a swivel!

ISO 21669 – General guidance on swivel use (rotation-resistance)

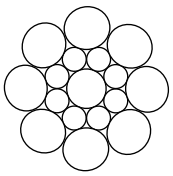
- Less than or equal to 1 turn/1000d lifting a load equivalent to 20% MBF, a swivel can be used
- Greater than 1 turn but no greater than 4 turns/1000d – a swivel may be used subject to the recommendations of the rope manufacturer and/or approval of a competent person
- Greater than 4 turns/1000d – a swivel should not be used

COMPACTING

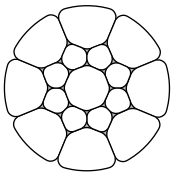
Compacted

OLIVEIRA is using the most improved and updated technology in the world (multiroll system) for compacting the strands, resulting in:

- Perfect control of the calibration and of the cross section
- No outer surface wearing and injuring
- No peel-off of the zinc coating
- No damage of the inner wires, thanks to the gradual lamination
- All these properties lead the ropes to the highest performance and resistance to fatigue, when compared with the other usual compacting technologies.



conventional strand



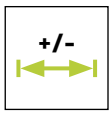
compacted strand

LUBRICATED

Lubricated

As a standard feature, Oliveira special wire ropes receive intensive lubrication during the production process. This in-process treatment will provide the rope with ample protection against corrosion and it is meant to reduce the friction between the elements which make up the rope as well as the friction between rope and sheaves or drums. This lubrication, however, only lasts for a limited time and should be reapplied periodically.

PRODUCTION TOLERANCE

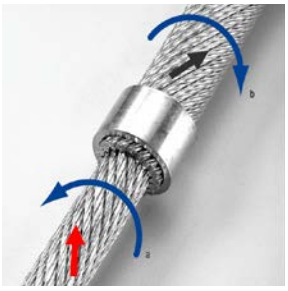


Tolerance

Oliveira special wire ropes are produced within a tolerance range between +0% and +5%. Generally the standard production tolerance is at the upper limit of the tolerance range, between +1% and +4%. For this reason Oliveira special wire ropes fulfill the requirements of the famous drum manufacturers.

GENERAL DEFINITIONS

ROTATION-RESISTANT ROPES



In a conventional rope, an external load creates a moment which tries to untwist the rope. A rotation resistant steel wire rope has a steel core which is an independent rope, closed in the opposite direction to the outer strands. Under load, the core tries to twist the rope in one direction, the outer strands try to twist it in the opposite direction. The geometrical design of a rotation resistant wire rope is such that the moments in the core and the outer strands compensate each other over a wide load spectrum, so that even with great lifting heights practically no rope twist occurs.

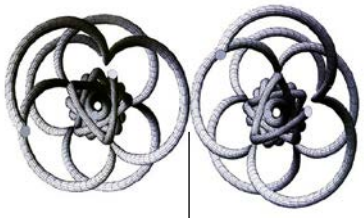
MULTIPLE LAYER SPOOLING

A drum coiling a rope in more than one layer is a multiple layer system with new demands to a wire rope.

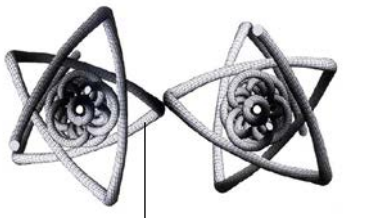
- Low diameter reduction under tension
- Crushing resistance in crossovers and layer crossovers
- Extreme smooth surface for less indentations or pressure in crossovers

The following rope properties are required for a long service life:

- Lang's lay to prevent indentations

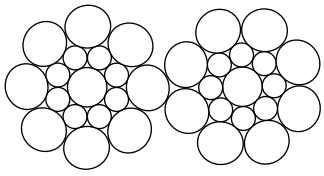


Lang's lay ropes: no indentations of outer wires

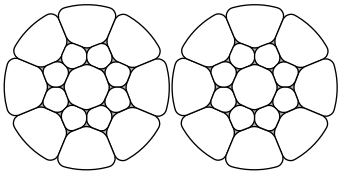


regular lay ropes: indentations of outer wires

- Compacted outer strands to prevent indentations



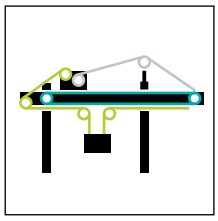
conventional strand



compacted strand

ROPE SELECTION BY APPLICATION

CONTAINER CRANE

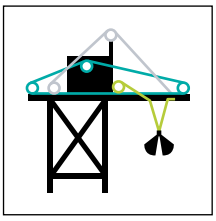


HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**

BOOM HOIST
OLIVEIRA **HD 8 K (Option PPI)**

TROLLEY
OLIVEIRA **HD 8 K (Option PPI)**

SHIP UNLOADER

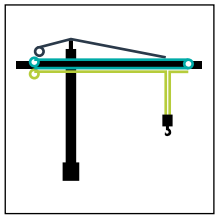


HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**

BOOM HOIST
OLIVEIRA **HD 8 K (Option PPI)**

TROLLEY
OLIVEIRA **HD 8 K (Option PPI)**

TOWER CRANE

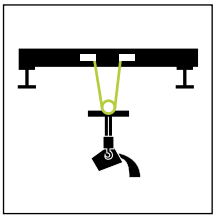


HOIST ROPE
OLIVEIRA **DURASCEND**

BOOM PENDANT
OLIVEIRA **HD 8 K (Option PPI)**

TROLLEY
OLIVEIRA **SC 6 K**

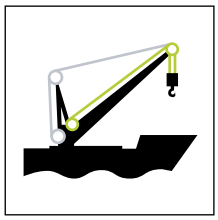
OVERHEAD CRANE



HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**
OLIVEIRA **SC 6 K**

Please note: Option PPI if temperature is bellow 115 degrees C on the surface of the rope!

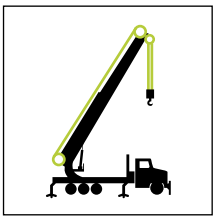
DECK CRANE



HOIST ROPE
OLIVEIRA **NR MAXIPACT (Option PPI)**
OLIVEIRA **NR 15 MAXILIFT (Option PPI)**

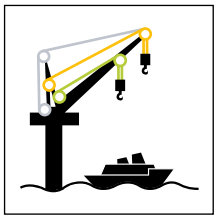
BOOM HOIST
OLIVEIRA **HD 8 K (Option PPI)**

TELESCOPIC MOBILE CRANE



HOIST ROPE
OLIVEIRA **NR MAXIPACT**
OLIVEIRA **DURASCEND**

OFFSHORE PEDESTAL CRANE

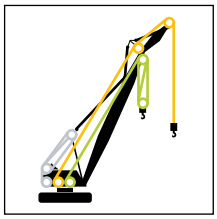


HOIST ROPE
OLIVEIRA **NR MAXIPACT (Option PPI)**

BOOM HOIST
OLIVEIRA **HD 8 K (Option PPI)**

AUXILIARY HOIST
OLIVEIRA **NR MAXIPACT (Option PPI)**

LATTICE BOOM CRAWLER CRANE

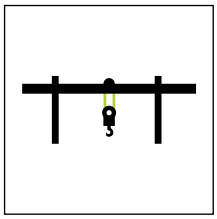


HOIST ROPE
OLIVEIRA **NR MAXIPACT**

BOOM HOIST
OLIVEIRA **DP 8 K (Option PPI)**
OLIVEIRA **HD 8 K (Option PPI)**

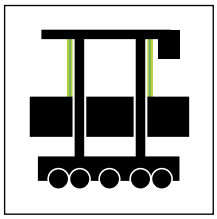
AUXILIARY HOIST
OLIVEIRA **NR MAXIPACT**

RUBBER TIRED GANTRY / RAIL MOUNTED GANTRY



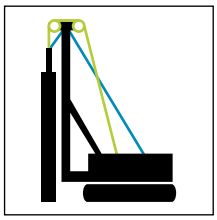
HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**
OLIVEIRA **DP 8 K (Option PPI)**

STRADDLE CARRIERS



HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**
OLIVEIRA **DP 8 K (Option PPI)**

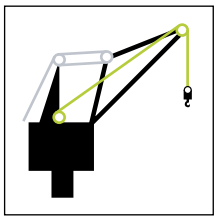
DRILLING / PILING



HOIST ROPE
OLIVEIRA **DURASCEND**

FEED ROPE
OLIVEIRA **HD 8 K (Option PPI)**

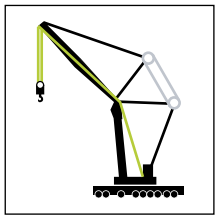
HARBOR MOBILE CRANE



HOIST ROPE
OLIVEIRA **HD 8 K (Option PPI)**

BOOM HOIST
OLIVEIRA **HD 8 K (Option PPI)**

LATTICE BOOM MOBILE CRANE



HOIST ROPE

OLIVEIRA **NR MAXIPACT**

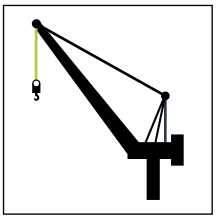
OLIVEIRA **DURASCEND**

BOOM HOIST

OLIVEIRA **DP 8 K (Option PPI)**

OLIVEIRA **HD 8 K (Option PPI)**

LUFFING-JIB TOWER CRANE



HOIST ROPE

OLIVEIRA **NR MAXIPACT**

OLIVEIRA **DURASCEND**

BOOM PENDANT

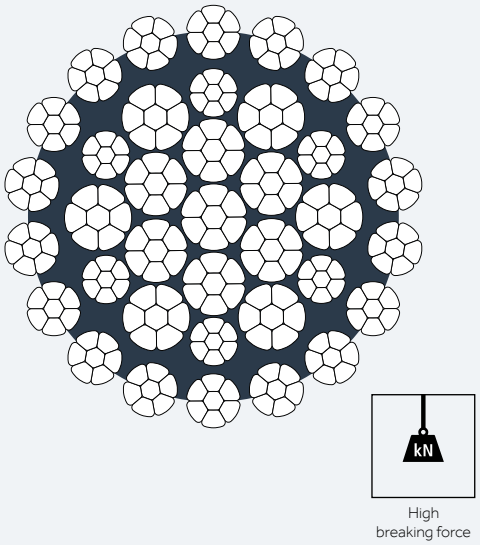
OLIVEIRA **HD 8 K (Option PPI)**

OLIVEIRA **DP 8 K (Option PPI)**

ROTATION-RESISTANT ROPES

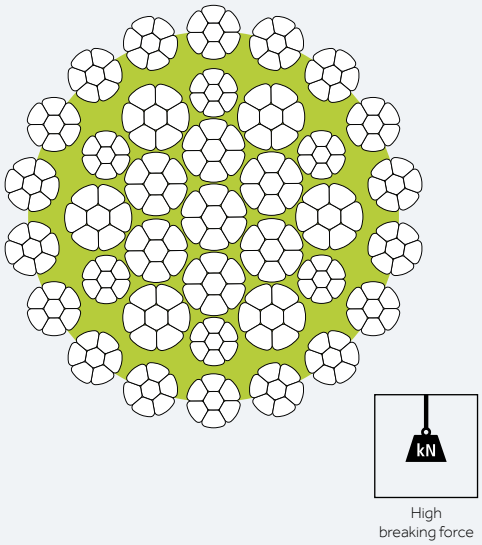
- Designed to generate reduced levels of torque and rotation when loaded.
- Designed with at least two layers of strands laid helically around a center.
- The direction of lay of the outer strands being opposite to that of the underlying layer.

OLIVEIRA
NR MAXIPACT



High breaking force

OLIVEIRA
NR MAXIPACT PPI



High breaking force

PROPERTIES

Swivel | Compacted | Lubricated | Tolerance

\+ PPI

APPLICATIONS

All cranes and performant lifting devices where non-rotating and high MBL ropes are required.

Recommended for offshore, deck cranes and marine environment.

OVERVIEW

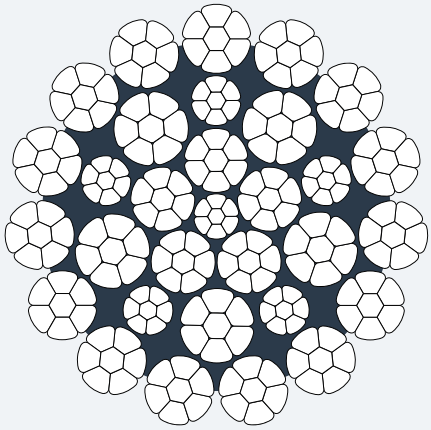
RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
23–3	12,70 – 52	37xK7	18	259	126	0,716	0,85 (1960*) 0,81 (2160*)
30	54 – 64	37xK19	18	710	342	0,726	0,83 (1960*) 0,79 (2160*)
>31	66 – 70	37xK26	18	1092	468	0,714	0,81 (1960*) 0,78 (2160*)

- Temperature range of use: -50°C to +75°C
- Please add 1.0% on the weight for ropes with PPI
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand

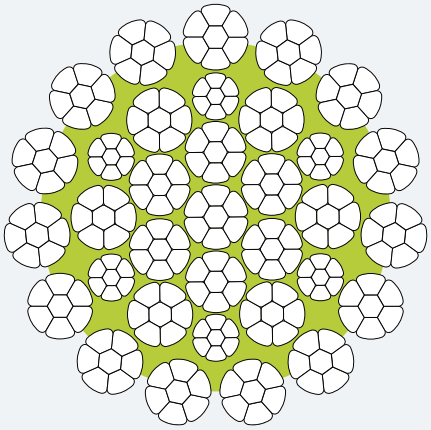
nominal diameter		weight		minimum breaking force							
				1960 N/mm²				2160 N/mm²			
mm	inch	kg/m	lb/ft	kN	t [metric]	lbs	t[2000lbs]	kN	t [metric]	lbs	t[2000lbs]
12,70	1/2	0,77	0,52	**148,0**	15,09	33.272	16,64	**155,9**	15,90	35.048	17,52
13		0,82	0,55	**157,8**	16,09	35.468	17,73	**165,7**	16,90	37.248	18,62
14		0,95	0,64	**183,3**	18,69	41.198	20,60	**192,5**	19,63	43.266	21,63
15		0,97	0,65	**209,6**	21,37	47.116	23,56	**220,6**	22,50	49.603	24,80
15,88	5/8	1,09	0,73	**230,0**	23,45	51.706	25,85	**241,0**	24,58	54.179	27,09
16		1,24	0,84	**239,4**	24,41	53.820	26,91	**251,4**	25,64	56.521	28,26
17		1,40	0,94	**269,7**	27,50	60.637	30,32	**283,4**	28,90	63.719	31,86
18		1,57	1,05	**302,5**	30,85	68.015	34,01	**317,7**	32,40	71.428	35,71
19	3/4	1,75	1,18	**338,9**	34,55	76.180	38,09	**355,9**	36,29	80.002	40,00
20		1,93	1,30	**374,2**	38,16	84.120	42,06	**393,0**	40,07	88.341	44,17
21		2,13	1,43	**412,2**	42,03	92.659	46,33	**432,9**	44,14	97.309	48,65
22		2,33	1,57	**452,0**	46,09	101.610	50,81	**474,7**	48,40	106.709	53,35
22,23	7/8	2,36	1,59	**458,0**	46,70	102.962	51,48	**481,0**	49,05	108.133	54,07
23		2,55	1,72	**494,8**	50,46	111.236	55,62	**519,6**	52,99	116.818	58,41
24		2,79	1,87	**540,3**	55,09	121.461	60,73	**567,4**	57,86	127.556	63,78
25		3,03	2,04	**587,1**	59,87	131.985	65,99	**616,6**	62,87	138.608	69,30
25,40	1	3,08	2,07	**595,4**	60,71	133.851	66,93	**625,3**	63,76	140.573	70,29
26		3,25	2,18	**634,2**	64,68	142.584	71,29	**666,1**	67,92	149.739	74,87
27		3,54	2,38	**683,6**	69,70	153.670	76,84	**717,9**	73,20	161.382	80,69
28		3,79	2,55	**734,0**	74,85	165.019	82,51	**770,9**	78,61	173.299	86,65
28,58	1 1/8	3,97	2,67	**768,3**	78,34	172.721	86,36	**806,8**	82,27	181.376	90,69
29		4,07	2,73	**790,0**	80,56	177.599	88,80	**824,4**	84,07	185.335	92,67
30		4,37	2,94	**846,3**	86,30	190.262	95,13	**888,8**	90,63	199.809	99,90
31,75	1 1/4	4,84	3,25	**930,0**	94,83	209.072	104,54	**975,0**	99,42	219.189	109,59
32		4,95	3,32	**959,6**	97,85	215.730	107,87	**1.007**	102,69	226.383	113,19
34		5,58	3,75	**1.079**	110,03	242.569	121,28	**1.133**	115,53	254.710	127,35
34,93	1 3/8	5,93	3,98	**1.146**	116,86	257.631	128,82	**1.202**	122,57	270.220	135,11
36		6,30	4,23	**1.221**	124,51	274.492	137,25	**1.282**	130,73	288.205	144,10
38	1 1/2	6,96	4,68	**1.352**	137,87	303.942	151,97	**1.418**	144,60	318.779	159,39
40		7,69	5,17	**1.495**	152,45	336.094	168,05	**1.568**	159,89	352.500	176,25
41,28	1 5/8	8,29	5,57	**1.602**	163,36	360.144	180,07	**1.682**	171,52	378.129	189,06
42		8,48	5,70	**1.645**	167,74	369.811	184,91	**1.730**	176,41	388.913	194,46
44		9,37	6,30	**1.818**	185,38	408.703	204,35	**1.909**	194,66	429.160	214,58
44,45	1 3/4	9,51	6,39	**1.838**	187,42	413.199	206,60	**1.928**	196,60	433.432	216,72
46		10,33	6,94	**1.995**	203,43	448.494	224,25	**2.095**	213,63	470.975	235,49
47,63	1 7/8	10,86	7,29	**2.095**	213,63	470.975	235,49	**2.190**	223,32	492.331	246,17
48		11,32	7,61	**2.184**	222,71	490.983	245,49	**2.293**	233,82	515.487	257,74
50		12,03	8,09	**2.331**	237,70	524.030	262,01	**2.451**	249,93	551.007	275,50
50,80	2	12,42	8,34	**2.400**	244,73	539.541	269,77	**2.517**	256,66	565.844	282,92
52		13,17	8,85	**2.548**	259,82	572.813	286,41	**2.676**	272,88	601.589	300,79
54	2 1/8	14,34	9,63	**2.731**	278,48	613.953	306,98	**2.868**	292,45	644.752	322,38
56		15,33	10,30	**2.854**	291,03	641.605	320,80	**3.049**	310,91	685.442	342,72
57,15	2 1/4	16,07	10,80	**2.981**	303,98	670.155	335,08	**3.180**	324,27	714.892	357,45
58		16,49	11,08	**3.063**	312,34	688.590	344,29	**3.261**	332,53	733.102	366,55
60		17,78	11,95	**3.293**	335,79	740.296	370,15	**3.500**	356,90	786.831	393,42
60,33	2 3/8	17,78	11,94	**3.335**	340,08	749.738	374,87	**3.520**	358,94	791.327	395,66
62		18,74	12,59	**3.477**	354,56	781.661	390,83	**3.705**	377,80	832.917	416,46
63,50	2 1/2	19,66	13,21	**3.652**	372,40	821.002	410,50	**3.870**	394,63	870.010	435,01
64		20,20	13,57	**3.750**	382,39	843.033	421,52	**4.018**	409,72	903.282	451,64
66		21,19	14,24	**3.900**	397,69	876.755	438,38	**4.135**	421,65	929.585	464,79
66,68	2 5/8	21,34	14,34	**3.910**	398,71	879.003	439,50	**4.150**	423,18	932.957	466,48
68		22,26	14,96	**4.100**	418,08	921.716	460,86	**4.354**	443,98	978.818	489,41
70	2 3/4	23,78	15,98	**4.322**	440,72	971.624	485,81	**4.646**	473,76	1.044.462	522,23

Special constructions and diameters available – please contact us directly.

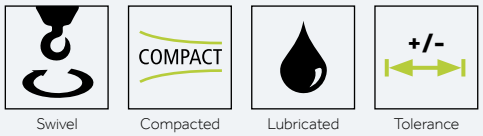
OLIVEIRA
NR15 MAXILIFT



OLIVEIRA
NR15 MAXILIFT PPI



PROPERTIES



Swivel | Compacted | Lubricated | Tolerance

\+ PPI

APPLICATIONS

For all the most severe hoist applications, intensive use, corrosive environment ... Traditional applications like mobile cranes, tower cranes, crawler cranes.

Offshore cranes, deck cranes, cargo cranes, foundation cranes (Kelly cranes), harbor cranes.

OVERVIEW

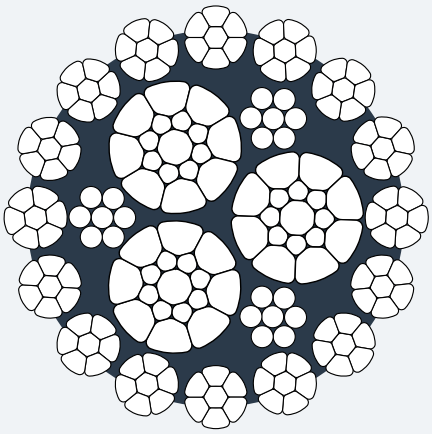
RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
23–2	18 – 28,58	31xK7	15	217	105	0,701	0,85 (1960*)
23–2	30 – 50,80	34xK7	15	238	105	0,705	0,81 (2160*)

- Temperature range of use: -50°C to +75°C
- Please add 1.0% on the weight for ropes with PPI
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand

nominal diameter		weight		minimum breaking force							
				1960 N/mm²				2160 N/mm²			
mm	inch	kg/m	lb/ft	kN	t [metric]	lbs	t[2000lbs]	kN	t [metric]	lbs	t[2000lbs]
18		1,55	1,04	**298,4**	30,43	67.079	33,54	**313,4**	31,95	70.445	35,22
19	3/4	1,71	1,15	**329,5**	33,60	74.082	37,04	**346,1**	35,29	77.800	38,90
20		1,92	1,29	**370,0**	37,73	83.183	41,59	**388,6**	39,62	87.358	43,68
21		2,11	1,41	**406,3**	41,43	91.348	45,67	**426,7**	43,51	95.932	47,97
22		2,31	1,55	**446,3**	45,51	100.337	50,17	**468,7**	47,80	105.372	52,69
22,23	7/8	2,36	1,59	**454,7**	46,37	102.221	51,11	**477,5**	48,69	107.346	53,67
23		2,53	1,70	**487,0**	49,66	109.476	54,74	**511,4**	52,15	114.969	57,48
24		2,76	1,85	**531,5**	54,19	119.476	59,74	**558,1**	56,91	125.471	62,74
25		2,99	2,01	**576,3**	58,76	129.550	64,78	**605,2**	61,71	136.051	68,03
25,40	1	3,09	2,07	**594,9**	60,66	133.739	66,87	**624,8**	63,71	140.461	70,23
26		3,23	2,17	**624,1**	63,64	140.300	70,15	**655,4**	66,83	147.340	73,67
27		3,47	2,33	**669,1**	68,23	150.412	75,21	**702,6**	71,65	157.960	78,98
28		3,72	2,50	**721,0**	73,53	162.097	81,05	**757,2**	77,22	170.231	85,12
28,58	1 1/8	3,92	2,63	**756,2**	77,11	170.000	85,00	**794,1**	80,98	178.521	89,26
30		4,30	2,89	**828,8**	84,52	186.329	93,16	**870,4**	88,76	195.680	97,84
31,75	1 1/4	4,79	3,22	**920,0**	93,81	206.824	103,41	**965,0**	98,40	216.941	108,47
32		4,83	3,24	**935,5**	95,39	210.300	105,15	**982,4**	100,18	220.852	110,43
34		5,51	3,71	**1.063**	108,40	238.972	119,49	**1.117**	113,90	251.112	125,56
34,93	1 3/8	5,80	3,90	**1.119**	114,11	251.561	125,78	**1.175**	119,82	264.150	132,08
36		6,23	4,19	**1.202**	122,57	270.220	135,11	**1.262**	128,69	283.709	141,85
38	1 1/2	6,90	4,63	**1.330**	135,62	298.996	149,50	**1.397**	142,45	314.058	157,03
40		7,64	5,14	**1.477**	150,61	332.043	166,02	**1.552**	158,26	348.903	174,45
41,28	1 5/8	8,23	5,53	**1.586**	161,73	356.547	178,27	**1.666**	169,88	374.532	187,27
42		8,38	5,63	**1.644**	167,64	369.586	184,79	**1.726**	176,00	388.020	194,01
44		9,34	6,27	**1.780**	181,51	400.160	200,08	**1.868**	190,48	419.943	209,97
44,45	1 3/4	9,59	6,45	**1.868**	190,48	419.943	209,97	**1.962**	200,07	441.075	220,54
46		10,13	6,81	**1.949**	198,74	438.153	219,08	**2.047**	208,74	460.184	230,09
47,63	1 7/8	10,78	7,24	**2.078**	211,90	467.153	233,58	**2.180**	222,30	490.083	245,04
48		10,91	7,33	**2.106**	214,75	473.448	236,72	**2.212**	225,56	497.277	248,64
50		11,97	8,04	**2.314**	235,96	520.208	260,10	**2.431**	247,89	546.510	273,26
50,80	2	12,24	8,22	**2.372**	241,88	533.247	266,62	**2.491**	254,01	559.999	280,00

Special constructions and diameters available – please contact us directly.

OLIVEIRA
DURASCEND



PROPERTIES

Swivel | Compacted | Lubricated | Tolerance

APPLICATIONS

This Durascend rope can be used for all crane and hoisting systems, in particular for mobile and tower cranes where good non-rotation properties are needed.

OVERVIEW

RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
23–2	8 – 19	22xK7	16	190	112	0,717	0,81 (2160*)

- Temperature range of use: -50°C to +75°C
- Only available in Lang's Lay
- Available in right hand and left hand
- Only available with galvanized wires

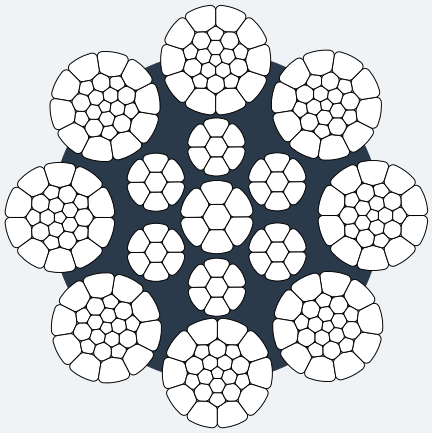
nominal diameter		weight		minimum breaking force 2160 N/mm²			
mm	**inch**	**kg/m**	**lb/ft**	**kN**	**t [metric]**	**lbs**	**t[2000lbs]**
8.0		0,31	0,21	**61,1**	6,23	13.736	6,87
9.0		0,39	0,26	**77,2**	7,87	17.355	8,68
10.0		0,48	0,32	**97,1**	9,90	21.829	10,91
11.0		0,59	0,40	**114,5**	11,68	25.741	12,87
12.0		0,70	0,47	**138,0**	14,07	31.024	15,51
13.0		0,83	0,56	**160,8**	16,40	36.149	18,07
14.0		0,96	0,65	**188,7**	19,24	42.421	21,21
15.0		1,11	0,74	**217,5**	22,18	48.896	24,45
16.0	5/8	1,25	0,84	**246,5**	25,14	55.415	27,71
17.0		1,40	0,94	**279,6**	28,51	62.857	31,43
18		1,56	1,05	**314,4**	32,06	70.680	35,34
19	3/4	1,75	1,18	**347,2**	35,40	78.054	39,03

Special constructions and diameters available – please contact us directly.

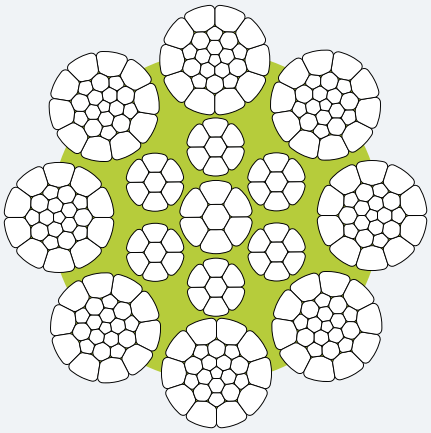
NON-ROTATION-RESISTANT ROPES

- Generate high levels of torque and rotation when loaded. Due to that the non-rotation-resistant ropes (Rotational) must not be used with a swivel.
- Designed with at least two layers of strands laid helically around a center.
- The direction of lay of the outer strands being same to that of the underlying layer.

OLIVEIRA **HD 8 K**



OLIVEIRA **HD 8 K PPI**



PROPERTIES

No Swivel | Compacted | Lubricated | Tolerance

\+ PPI

APPLICATIONS

When rotation resistant ropes are not required (twin hoist systems with right and left ropes, small heights). Hoist for steel mill cranes, container cranes, floating cranes and boom hoist for deck cranes, luffing and mobile cranes, grab cranes.

OVERVIEW

RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
03	8 – 11	8xK12	8	145	96	0,672	
03	12 – 14	8xK17	8	185	136	0,675	0,85 (1770*)
09	15 – 28,58	8xK26	8	257	208	0,677	0,85 (1960*)
11	30 – 42	8xK31	8	297	248	0,673	0,82 (2160*)
13	44 – 60	8xK36	8	407	288	0,683	
13	62 – 64	8xK36	8	475	288	0,671	0,84 (1770*)
>13	66 – 72	8xK41	8	515	328	0,666	0,83 (1960*) 0,81 (2160*)

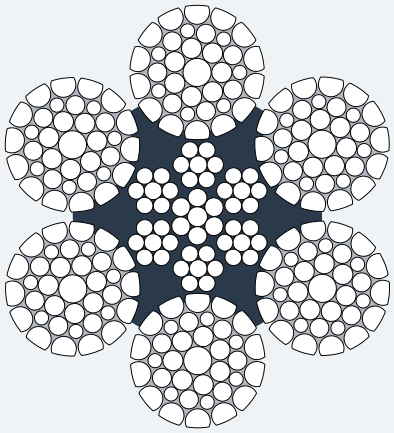
- Temperature range of use: -50°C to +75°C
- Please add 1.5% on the weight for ropes with PPI
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand

nominal diameter		weight		minimum breaking force							
				1770 N/mm²				1960 N/mm²			
mm	inch	kg/m	lb/ft	kN	t [metric]	lbs	t [2000 lbs]	kN	t [metric]	lbs	t [2000 lbs]
8	5/16	0,30	0,20	**50,4**	5,14	11.328	5,66	**55,8**	5,69	12.544	6,27
9		0,37	0,25	**63,3**	6,46	14.235	7,12	**70,1**	7,15	15.763	7,88
9,53	3/8	0,39	0,26	**66,8**	6,81	15.016	7,51	**74,0**	7,54	16.627	8,31
10		0,45	0,30	**78,3**	7,98	17.600	8,80	**86,7**	8,84	19.489	9,74
11	7/16	0,57	0,38	**96,7**	9,86	21.732	10,87	**107,0**	10,92	24.064	12,03
12		0,65	0,44	**115,1**	11,74	25.876	12,94	**126,4**	12,89	28.415	14,21
12,70	1/2	0,71	0,48	**124,4**	12,69	27.966	13,98	**138,0**	14,07	31.015	15,51
13		0,77	0,52	**136,6**	13,93	30.709	15,35	**149,0**	15,19	33.491	16,75
14		0,90	0,61	**157,9**	16,10	35.497	17,75	**174,8**	17,82	39.297	19,65
15		1,03	0,69	**180,0**	18,35	40.466	20,23	**202,7**	20,67	45.569	22,78
15,88	5/8	1,15	0,77	**200,0**	20,39	44.962	22,48	**220,0**	22,43	49.458	24,73
16		1,16	0,78	**204,0**	20,80	45.861	22,93	**229,4**	23,39	51.571	25,79
17		1,30	0,87	**227,0**	23,15	51.032	25,52	**250,0**	25,49	56.202	28,10
18		1,49	1,00	**260,2**	26,53	58.495	29,25	**288,2**	29,39	64.790	32,39
19	3/4	1,64	1,10	**292,1**	29,79	65.667	32,83	**323,5**	32,99	72.726	36,36
20		1,84	1,23	**321,0**	32,73	72.164	36,08	**355,5**	36,25	79.920	39,96
22		2,21	1,49	**391,7**	39,94	88.058	44,03	**433,7**	44,23	97.500	48,75
22,23	7/8	2,26	1,52	**394,9**	40,27	88.784	44,39	**435,0**	44,36	97.792	48,90
24		2,63	1,77	**464,5**	47,37	104.424	52,21	**514,3**	52,44	115.619	57,81
25		2,86	1,92	**504,2**	51,41	113.349	56,67	**558,2**	56,92	125.488	62,74
25,40	1	2,94	1,98	**519,0**	52,92	116.676	58,34	**572,0**	58,33	128.591	64,30
26		3,13	2,10	**548,9**	55,97	123.398	61,70	**607,8**	61,98	136.639	68,32
28		3,60	2,42	**629,6**	64,20	141.540	70,77	**697,3**	71,10	156.759	78,38
28,58	1 1/8	3,67	2,46	**638,0**	65,06	143.428	71,71	**707,0**	72,09	158.940	79,47
30		4,12	2,77	**727,1**	74,14	163.459	81,73	**803,0**	81,88	180.522	90,26
31,75	1 1/4	4,59	3,09	**812,0**	82,80	182.545	91,27	**895,0**	91,26	201.204	100,60
32		4,67	3,14	**828,0**	84,43	186.142	93,07	**911,0**	92,90	204.801	102,40
34		5,29	3,56	**936,4**	95,49	210.511	105,26	**1.025**	104,52	230.429	115,21
34,93	1 3/8	5,51	3,70	**954,0**	97,28	214.468	107,23	**1.057**	107,78	237.623	118,81
36		5,84	3,93	**1.040**	106,05	233.801	116,90	**1.150**	117,27	258.530	129,27
38	1 1/2	6,58	4,42	**1.159**	118,19	260.554	130,28	**1.271**	129,61	285.732	142,87
40		7,30	4,90	**1.285**	131,03	288.879	144,44	**1.410**	143,78	316.981	158,49
41,28	1 5/8	7,47	5,02	**1.305**	133,07	293.376	146,69	**1.464**	149,29	329.120	164,56
42		7,98	5,36	**1.403**	143,07	315.407	157,70	**1.538**	156,83	345.756	172,88
44		9,00	6,05	**1.554**	158,46	349.353	174,68	**1.736**	177,02	390.268	195,13
44,45	1 3/4	9,04	6,08	**1.572**	160,30	353.400	176,70	**1.743**	177,74	391.842	195,92
46		9,78	6,57	**1.713**	174,68	385.098	192,55	**1.883**	192,01	423.315	211,66
47,63	1 7/8	10,40	6,99	**1.774**	180,90	398.811	199,41	**1.964**	200,27	441.525	220,76
48		10,61	7,13	**1.858**	189,46	417.695	208,85	**2.055**	209,55	461.982	230,99
50		11,62	7,81	**1.986**	202,52	446.470	223,24	**2.253**	229,74	506.494	253,25
50,80	2	11,87	7,98	**2.044**	208,43	459.509	229,75	**2.283**	232,80	513.239	256,62
52		12,51	8,41	**2.147**	218,93	482.665	241,33	**2.427**	247,49	545.611	272,81
54	2 1/8	13,49	9,07	**2.316**	236,17	520.657	260,33	**2.607**	265,84	586.077	293,04
56		14,59	9,80	**2.480**	252,89	557.526	278,76	**2.800**	285,52	629.465	314,73
57,15	2 1/4	14,92	10,03	**2.572**	262,27	578.208	289,10	**2.849**	290,52	640.481	320,24
58		15,67	10,53	**2.649**	270,12	595.519	297,76	**2.957**	301,53	664.760	332,38
60		16,71	11,23	**2.842**	289,80	638.907	319,45	**3.143**	320,50	706.574	353,29
60,33	2 3/8	16,71	11,23	**2.844**	290,01	639.357	319,68	**3.147**	320,90	707.474	353,74
62		17,45	11,73	**2.969**	302,75	667.458	333,73	**3.277**	334,16	736.699	368,35
63,50	2 1/2	18,15	12,20	**3.092**	315,30	695.109	347,55	**3.424**	349,15	769.746	384,87
64		18,66	12,54	**3.200**	326,31	719.388	359,69	**3.509**	357,82	788.854	394,43
66		19,67	13,22	**3.389**	345,58	761.877	380,94	**3.708**	378,11	833.591	416,80
66,68	2 5/8	19,94	13,40	**3.405**	347,21	765.474	382,74	**3.760**	383,41	845.281	422,64
68		20,81	13,98	**3.565**	363,53	801.444	400,72	**3.924**	400,14	882.150	441,08
70	2 3/4	21,69	14,57	**3.733**	380,66	839.212	419,61	**4.026**	410,54	905.081	452,54
72		23,26	15,63	**3.965**	404,32	891.367	445,68	**4.250**	433,38	955.438	477,72

2160 N/mm²			
kN	t [metric]	lbs	t [2000 lbs]
57,7	5,88	12.971	6,49
73,6	7,50	16.535	8,27
79,6	8,12	17.899	8,95
92,4	9,42	20.772	10,39
112,0	11,42	25.179	12,59
132,6	13,52	29.800	14,90
144,7	14,76	32.530	16,26
156,2	15,93	35.123	17,56
187,0	19,07	42.039	21,02
214,0	21,82	48.109	24,05
235,0	23,96	52.830	26,42
242,4	24,72	54.494	27,25
267,0	27,23	60.024	30,01
307,0	31,31	69.016	34,51
342,0	34,87	76.885	38,44
379,0	38,65	85.203	42,60
458,5	46,75	103.075	51,54
462,0	47,11	103.862	51,93
556,0	56,70	124.994	62,50
602,0	61,39	135.335	67,67
611,0	62,30	137.358	68,68
655,0	66,79	147.250	73,62
748,0	76,27	168.157	84,08
751,0	76,58	168.831	84,42
864,0	88,10	194.235	97,12
951,0	96,98	213.793	106,90
968,0	98,71	217.615	108,81
1.091	111,25	245.267	122,63
1.109	113,09	249.313	124,66
1.217	124,10	273.592	136,80
1.332	135,83	299.445	149,72
1.478	150,71	332.268	166,13
1.535	156,53	345.082	172,54
1.613	164,48	362.617	181,31
1.820	185,59	409.152	204,58
1.828	186,40	410.951	205,48
1.975	201,39	443.998	222,00
2.112	215,36	474.796	237,40
2.155	219,75	484.463	242,23
2.362	240,86	530.999	265,50
2.394	244,12	538.193	269,10
2.545	259,52	572.139	286,07
2.734	278,79	614.628	307,31
2.925	298,27	657.566	328,78
3.010	306,93	676.675	338,34
3.102	316,32	697.357	348,68
3.297	336,20	741.195	370,60
3.301	336,61	742.094	371,05
3.448	351,60	775.141	387,57
3.591	366,18	807.289	403,64
3.680	375,26	827.297	413,65
3.896	397,28	875.855	437,93
3.954	403,20	888.894	444,45
4.117	419,82	925.538	462,77
4.330	441,54	973.423	486,71
4.570	466,01	1.027.377	513,69

Special constructions and diameters available – please contact us directly.

OLIVEIRA
SC 6 K



PROPERTIES

No Swivel | Compacted | Lubricated | Tolerance

APPLICATIONS

Can be used for all hoist and pulling applications when a higher MBL instead of 6 strands conventional ropes is required. Manufacturing of slings with a high MBL. Mainly used for logging (forest industry).

OVERVIEW

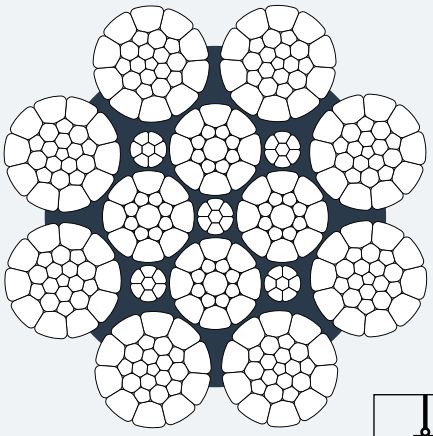
RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
02	10 – 13	6xK19	6	163	114	0,666	0,86 (1960*)
06	14 – 19	6xK26	6	205	156	0,663	
08	20 – 29	6xK31	6	235	186	0,675	0,84 (1960*)
09	30 – 60	6xK36	6	265	216	0,675	

- Temperature range of use: -50°C to +75°C
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand

nominal diameter		weight		minimum breaking force 1960 N/mm²			
mm	**inch**	**kg/m**	**lb/ft**	**kN**	**t [metric]**	**lbs**	**t[2000lbs]**
10		0,45	0,30	**87,7**	8,94	19.716	9,86
11	7/16	0,54	0,37	**107,0**	10,91	24.055	12,03
12		0,64	0,43	**125,8**	12,83	28.292	14,15
12,70	1/2	0,73	0,49	**138,0**	14,07	31.024	15,51
13		0,77	0,52	**150,1**	15,31	33.744	16,87
14		0,89	0,60	**169,3**	17,26	38.052	19,03
15		1,00	0,67	**190,9**	19,47	42.916	21,46
15,88	5/8	1,11	0,74	**209,0**	21,31	46.985	23,49
16		1,15	0,77	**218,8**	22,31	49.190	24,59
17		1,31	0,88	**250,5**	25,54	56.315	28,16
18		1,45	0,97	**276,7**	28,21	62.196	31,10
19	3/4	1,62	1,09	**311,1**	31,72	69.940	34,97
20		1,78	1,20	**344,8**	35,16	77.509	38,75
22		2,16	1,45	**419,0**	42,73	94.195	47,10
22,23	7/8	2,24	1,50	**420,0**	42,83	94.420	47,21
24		2,61	1,76	**504,3**	51,42	113.371	56,69
25		2,80	1,88	**542,5**	55,32	121.959	60,98
25,40	1	2,91	1,96	**565,2**	57,63	127.062	63,53
26		3,09	2,07	**598,2**	61,00	134.481	67,24
28		3,54	2,38	**681,6**	69,50	153.228	76,61
28,58	1 1/8	3,65	2,45	**687,0**	70,05	154.444	77,22
29		3,81	2,56	**737,7**	75,22	165.842	82,92
30		4,11	2,76	**786,6**	80,21	176.826	88,41
31,75	1 1/4	4,58	3,07	**850,0**	86,68	191.088	95,54
32		4,61	3,09	**890,9**	90,84	200.276	100,14
34		5,22	3,51	**1.011**	103,09	227.282	113,64
34,93	1 3/8	5,56	3,74	**1.030**	105,03	231.553	115,78
35		5,56	3,74	**1.050**	107,07	236.049	118,02
36		5,85	3,93	**1.131**	115,33	254.259	127,13
38	1 1/2	6,51	4,38	**1.261**	128,59	283.484	141,74
40		7,23	4,86	**1.401**	142,86	314.957	157,48
41,28	1 5/8	7,77	5,22	**1.450**	147,86	325.973	162,99
42		7,91	5,32	**1.530**	156,02	343.958	171,98
44		8,80	5,91	**1.701**	173,45	382.400	191,20
44,45	1 3/4	8,96	6,02	**1.710**	174,37	384.423	192,21
46		9,55	6,41	**1.847**	188,34	415.222	207,61
47,63	1 7/8	10,34	6,95	**1.940**	197,82	436.129	218,06
48		10,40	6,99	**2.012**	205,17	452.316	226,16
50		11,32	7,61	**2.178**	222,09	489.634	244,82
50,80	2	11,54	7,75	**2.182**	222,50	490.533	245,27
52		12,18	8,19	**2.340**	238,61	526.053	263,03
54	2 1/8	12,97	8,71	**2.460**	250,85	553.030	276,51
56		14,01	9,41	**2.649**	270,12	595.519	297,76
57,15	2 1/4	14,64	9,84	**2.758**	281,24	620.023	310,01
58		15,01	10,09	**2.840**	289,60	638.457	319,23
60		16,06	10,79	**3.040**	309,99	683.419	341,71

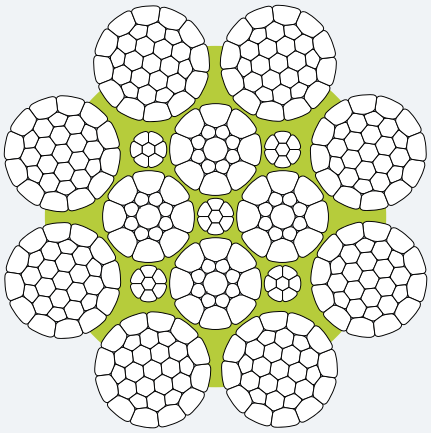
Special constructions and diameters available – please contact us directly.

OLIVEIRA **DP 8 K**



High breaking force

OLIVEIRA **DP 8 K PPI**



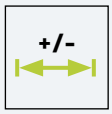
PROPERTIES

Parallel Construction

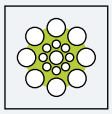
No Swivel

Compacted

Lubricated



Tolerance



PPI

APPLICATIONS

When an extremely high MBL is required for a multipart reeving hoist system: electric hoists, twin hoists systems, boom hoist and pendant rope for mobile cranes, tower cranes and all marine equipments.

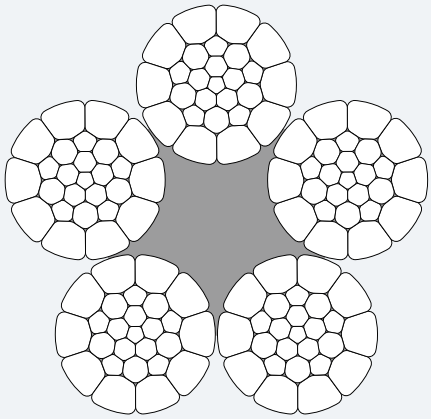
OVERVIEW

RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
03	6,40 – 7,20	8xK12	8	105	96	0,701	0,86 (2160*)
03	8 – 17	8xK17	8	239	136	0,710	
09	18 – 28,58	8xK26	8	311	208	0,712	
11	30 – 38	8xK31	8	351	248	0,721	

- Temperature range of use: -50°C to +75°C
- PPI for ropes ≥ ø 8mm
- Please add 1.5% on the weight for ropes with PPI
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand
- Fleet angle must be < 1°30

nominal diameter		weight		minimum breaking force 2160 N/mm²			
mm	**inch**	**kg/m**	**lb/ft**	**kN**	**t [metric]**	**lbs**	**t[2000lbs]**
6,40		0,19	0,13	**41,4**	4,22	9.307	4,65
7		0,23	0,16	**50,5**	5,15	11.353	5,68
7,20		0,25	0,16	**53,2**	5,42	11.960	5,98
8	5/16	0,30	0,20	**64,1**	6,54	14.410	7,21
8,50		0,34	0,23	**73,3**	7,47	16.478	8,24
9		0,39	0,26	**82,3**	8,39	18.502	9,25
9,53	3/8	0,43	0,29	**92,2**	9,40	20.727	10,36
10		0,48	0,32	**102,4**	10,44	23.020	11,51
11	7/16	0,57	0,38	**123,1**	12,55	27.674	13,84
12		0,68	0,46	**147,3**	15,02	33.114	16,56
12,70	1/2	0,76	0,51	**159,0**	16,21	35.745	17,87
13		0,82	0,55	**176,3**	17,98	39.634	19,82
14		0,93	0,63	**202,6**	20,66	45.546	22,77
15		1,09	0,73	**236,9**	24,16	53.262	26,63
15,88	5/8	1,21	0,82	**254,4**	25,94	57.191	28,60
16		1,22	0,82	**263,9**	26,91	59.325	29,66
17		1,40	0,94	**302,8**	30,88	68.072	34,04
18		1,54	1,04	**335,3**	34,19	75.374	37,69
19	3/4	1,73	1,16	**375,8**	38,32	84.491	42,25
20		1,90	1,27	**410,9**	41,90	92.364	46,18
22		2,31	1,55	**500,8**	51,07	112.584	56,29
22,23	7/8	2,35	1,58	**503,0**	51,29	113.079	56,54
24		2,81	1,89	**607,0**	61,90	136.459	68,23
25,40	1	3,06	2,05	**649,0**	66,18	145.901	72,95
26		3,23	2,17	**701,1**	71,49	157.618	78,81
28		3,74	2,51	**809,5**	82,55	181.983	90,99
28,58	1/ 1/8	3,89	2,61	**820,0**	83,62	184.343	92,17
30		4,34	2,92	**942,1**	96,06	211.782	105,89
31,75	1 1/4	4,85	3,26	**1.023**	104,32	229.980	114,99
32		4,90	3,29	**1.066**	108,70	239.646	119,82
34		5,62	3,77	**1.220**	124,41	274.267	137,13
34,93	1 3/8	5,84	3,93	**1.231**	125,53	276.740	138,37
36		6,25	4,20	**1.357**	138,38	305.066	152,53
38	1 1/2	7,00	4,71	**1.523**	155,30	342.384	171,19

OLIVEIRA
LP 5



PROPERTIES

No Swivel | Compacted | Lubricated | Tolerance

APPLICATIONS

Suspended gondolas and platforms. Jaw pulling device.
Overhead cranes and electric hoists. Wind mill hoists and forest winches.

OVERVIEW

RCN	Diameter range [mm]	Construction	Number of outer strands	Number of wires	Number of outer load bearing wires	Average fill factor	Average spin factor *N/mm²
02	6	5x K12-CWP*	5	78	60	0,633	
03	8,30–10,30	5x K19-CF	5	95	95	0,544	0,86 (1960*) 0,84 (2160*)
05	11,50–14	5x K26-CF	5	130	130	0,550	
06	16,3	5x K31-CF	5	155	155	0,533	

- Temperature range of use: -50°C to +75°C
- Available in ordinary lay and Lang's lay
- Available in right hand and left hand

* core with 6x3 = 18 wires

nominal diameter		weight		minimum breaking force							
				1960 N/mm²				2160 N/mm²			
mm	**inch**	**kg/m**	**lb/ft**	**kN**	**t [metric]**	**lbs**	**t[2000lbs]**	**kN**	**t [metric]**	**lbs**	**t[2000lbs]**
6		0,15	0,10	**30,2**	3,08	6.791	3,40	**31,7**	3,23	7.124	3,56
8,30		0,26	0,18					**54,3**	5,53	12.198	6,10
9		0,32	0,22					**66,9**	6,82	15.040	7,52
9,50		0,34	0,23					**69,1**	7,05	15.544	7,77
10,30		0,40	0,27					**82,0**	8,36	18.433	9,22
11,50		0,49	0,33	**93,9**	9,58	21.110	10,55				
11,60		0,50	0,34	**95,2**	9,71	21.410	10,71				
14		0,77	0,52					**157,9**	16,11	35.507	17,75
16,30		0,98	0,66	**187,8**	19,15	42.229	21,11				

Special constructions and diameters available – please contact us directly.

DISCARD CRITERIA

DISCARD CRITERIA ACCORDING TO ISO 4309*

Wire ropes should be visually inspected at frequent intervals by a competent person to make sure that the rope is in a safe condition and has not reached one of the following criteria:

1) Visible broken wires (see the following tables)
2) Reduction in rope diameter
3) Fracture of strands
4) Corrosion
5) Deformation and damage

SINGLE-LAYER AND PARALLEL-CLOSED ROPES

Number of visible broken wires for ropes working in steel sheaves.

NOTE: Ropes having outer strands of Seale construction where the number of wires in each strand is 19 or less (e.g. 6 × 19 Seale) are placed in this table two rows above that row in which the construction would normally be placed based on the number of load bearing wires in the outer layer of strands.

		Number of visible broken outer wires[2]					
		Rope working (single-layer drum)				**Rope spooling (multi-layerdrum)[3]**	
		Sections of rop working in steel sheaves and/or spooling on a single-layer drum				Sections of rope spooling on a multi-layer drum	
		Classes M1 to M4 or class unknown[4]				**All classes**	
		Ordinary lay (sZ, zS)		**Lang lay (sS, zZ)**		**Ordinary and Lang lay**	
RCN	**Number of load-bearing wires in the outer strands of the rope[1]** n	**Over a length of 6*d*[5]**	**Over a length of 30*d*[5]**	**Over a length of 6*d*[5]**	**Over a length of 30*d*[5]**	**Over a length of 6*d*[5]**	**Over a length of 30d[5]**
01	$n \leq 50$	2	4	1	2	4	8
02	$51 \leq n \leq 75$	3	6	2	3	6	12
03	$76 \leq n \leq 100$	4	8	2	4	8	16
04	$101 \leq n \leq 120$	5	10	2	5	10	20
05	$121 \leq n \leq 140$	6	11	3	6	12	22
06	$141 \leq n \leq 160$	6	13	3	6	12	26
07	$161 \leq n \leq 180$	7	14	4	7	14	28
08	$181 \leq n \leq 200$	8	16	4	8	16	32
09	$201 \leq n \leq 220$	9	18	4	9	18	36
10	$221 \leq n \leq 240$	10	19	5	10	20	38
11	$241 \leq n \leq 260$	10	21	5	10	20	42
12	$261 \leq n \leq 280$	11	22	6	11	22	44
13	$281 \leq n \leq 300$	12	24	6	12	24	48
	$n > 300$	0,04 × n	0,08 × n	0,02 × n	0,04 × n	0,08 × n	0,16 × n

1. For the purposes of this International Standard, Filler wires are not regarded as load-bearing wires and are not included in the values of n.
2. A broken wire has two ends (counted as one wire).
3. The values apply to deterioration that occurs at the cross-over zones and interference between wraps due to fleet angle effects (and not to those sections of rope which only work in sheaves and do not spool on the drum).
4. Twice the number of broken wires listed may be applied to ropes on mechanisms whose classification is known to be M5 to M8.
5. d = nominal diameter of rope.

Classes M1 to M4 equates to mechanism group $1E_m$ to $1A_m$ | Classes M5 to M8 equates to mechanism group 2_m to 5_m
Please pay attention to the country- / application-specific standards.

ROTATION-RESISTANT ROPES

Number of visible broken wires for ropes working in steel sheaves.

NOTE: Ropes having outer strands of Seale construction where the number of wires in each strand is 19 or less (e.g. 18 × 19 Seale– WSC) are placed in this table two rows above that row in which the construction would normally be placed based on the number of wires in the outer layer of strands.

		Number of visible broken outer wires[2]			
		Rope working on a single-layer drum		**Rope spooling on a multi-layer drum[3]**	
		Sections of rop working in steel sheaves and/or spooling on a single-layer drum		Sections of rope spooling on a multi-layer drum	
RCN	**Number of outer strands or number of load-bearing wires in the outer strands of the rope[1]** n	**Over a length of $6d$[4]**	**Over a length of $30d$[4]**	**Over a length of $6d$[4]**	**Over a length of $30d$[4]**
21	4 strands $n \leq 100$	2	4	2	4
22	3 or 4 strands $n \geq 100$	2	4	4	8
		11 or more outer strands			
23–1	$71 \leq n \leq 100$	2	4	4	8
23–2	$101 \leq n \leq 120$	3	5	5	10
23–3	$121 \leq n \leq 140$	3	5	6	11
24	$141 \leq n \leq 160$	3	6	6	13
25	$161 \leq n \leq 180$	4	7	7	14
26	$181 \leq n \leq 200$	4	8	8	16
27	$201 \leq n \leq 220$	4	9	9	18
28	$221 \leq n \leq 240$	5	10	10	19
29	$241 \leq n \leq 260$	5	10	10	21
30	$261 \leq n \leq 280$	6	11	11	22
31	$281 \leq n \leq 300$	6	12	12	24
	$n > 300$	6	12	12	24

1. For the purposes of this International Standard, Filler wires are not regarded as load-bearing wires and are not included in the values of n.
2. A broken wire has two ends.
3. The values apply to deterioration that occurs at the cross-over zones and interference between wraps due to fleet angle effects (and not to those sections of rope that only work in sheaves and do not spool on the drum).
4. d = nominal diameter of rope.

Please pay attention to the country- / application-specific standards.

* According to the current valid Version / Edition

CONVERSION TABLE

LENGTH

1 m	3,28083	ft
1 m	39,36997	inch
1 km	0,621371	miles
1 ft	0,3048	m
1 mile	1,609344	km
1 inch	0,0254	m

TENSILE

1 N/mm²	0,101972	kp/mm²
1 N/mm²	145,037719	psi
1 N/mm²	10	bar
1 N/mm²	1	Mpa

FORCE

1 kN	101,9716	kp
1 kN	0,1019716	metric tnf
1 kN	224,8089	lbf

AREA

1 mm²	0,001550	in²
1 m²	10,76391	ft²
1 ft²	0,092903	m²
1 in²	645,16	mm²
1 m²	1,19599	yard²
1 yard²	0,836128	m²

MASS

1 metric t	1000	kg
1 metric t	1,102311	short t
1 metric t	0,984207	long t
1 metric t	2204,623	lbs
1 lbs	0,453529	kg
1 long t	1,016047	metric t
1 short t	0,907185	metric t

LENGTH MASS

1 kg/m	0,671970	lbs/ft
1 lbs/ft	1,488164	kg/m

FORMER OLIVEIRA STEEL WIRE ROPES

Rotation-resistant:
- LT 24 C
- LT 17
- LT 18
- Towerlift
- LT 24 K
- DC 4 K

Non-rotation-resistant:
- HD9K + PPI
- C8C + PPI
- 6x19S + IWRC / 6 x 36 WS + IWRC
- Ennelift
- 8x19 S+ FC (Sisal core)
- 6x19 S + FC (Polypropylene core)
- DP 10 K

Product specifications are subject to change without notice or obligation. The shown photographs, drawings or cross sections are only for illustrative purposes, the images can vary depending on requested diameter and current status of technical development.

The information supplied in this brochure is only a guideline for rope selection. Please contact us for any information or advice on the use of our ropes or if you have any doubt in selecting a rope for a specific application.

Any warranty, expressed or implied as to quality, performance or fitness for use of WireCo WorldGroup products is always premised on the condition that the published strengths apply only to new, unused products, that the mechanical equipment on which such products are used is properly designed and maintained, that such products are properly stored, handled, used and maintained, and properly inspected on a regular basis during the period of use.

Seller shall not be liable under any circumstances for consequential or incidental damages or secondary charges including but not limited to personal injury, labor costs, a loss of profits resulting from the use of said products or from said products being incorporated in or becoming a component of any other product.

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