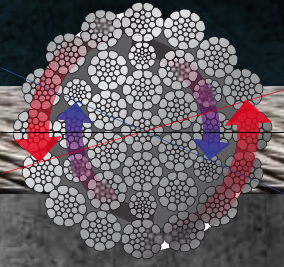


# N2

HYROPE

*beyond anything*



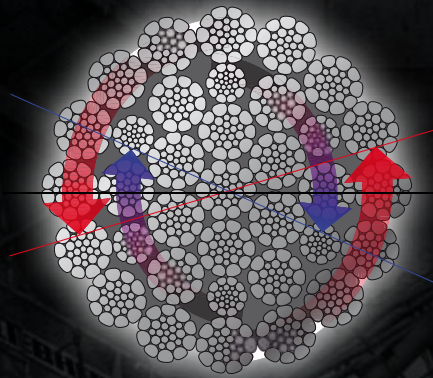
Kiswire is the largest wire rope producer in the world. Annually, about 130.000 tons of wire rope is delivered, worldwide. For decades, Kiswire is specializing in the development and production of wire rope. Meanwhile, the company has acquired a reputable and leading position in a great variety of markets, in literally all corners of the world. The offshore industry is one is a main market for Kiswire since 25 years, meanwhile.

## *SubSea Hoisting Ropes*

Pipe Lay Barges manufacture oil and gas pipes, which are laid on the bottom of the sea. For several reasons, the manufactured pipe has to be disconnected from the barge, and laid down on the seabed for a certain time (abandon) once in a while. Eventually, the same pipe needs to be taken up from the seabed and lifted onboard again to continue the manufacturing process (recovery). Both S-lay and J-lay barges operate with A&R systems as described. Depending on water depth and subsequently the length of A&R ropes required, a choice of rope is made out of the following available rope constructions..



6x36WS+IWRC in single or dual use.  
Dual use of A&R ropes consist of a right and a left laid rope, operating as a pair. In the event of greater working depths, multi strand, low rotating ropes are applied. For instance, 35xK7, 35xK19S, 35xK26WS, 55xK7, 55xK19S, 55xK26WS, 55xK31WS.

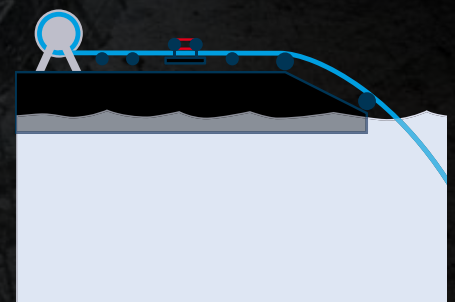


Single layer ropes, such as 6 and 8 strand constructions, have a much greater tendency to rotate under load than multi strand ropes. In fact, a multi strand rope is designed and manufactured to not to rotate at all, or minimal.

The longer the ropes, the deeper the operation depths, the higher the tendency to rotate.

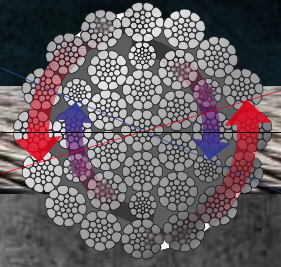
### **Torque**

All wire ropes have inherent rotation characteristics that will produce a turning moment in the rope. With both ends fixed and unable to rotate, the turning moment will generate a TORQUE at the fixed points. Whereas, if one end of the rope is free to rotate, the generated force will result in rope TURN and therefore load rotation.



  
**Kiswire**  
[www.kiswire.com](http://www.kiswire.com)





### SubSea Hoisting Ropes

#### Average torque factors for the following rope constructions are :

35xK7 non-rotating	torque 0.020
35xK26WS non-rotating	torque 0.018
55xK7 non-rotating	torque 0.018
55xK31WS non rotating	torque 0.018

#### Torque calculation

Now what we really want to know about a rope is how much torque is generated when a load is applied. The amount of torque generated by a rope under load is :

#### the applied load x torque value

Example :  
100 mm rope, loaded by 20% of its MBL (160.000 kg)  
The generated torque is  
 $160.000 \text{ kg} \times 0.076 (6x36WS+IWRC) = 12.160 \text{ kg/mm}^2$

#### Traction winches

The A&R winch ropes are commonly stored on a storage drum onboard the vessel. To generate the power to abandon and recover the pipe, traction winches are applied. A twin drum winch device, requiring precise diameter/groove ratios, stable rope constructions, superior rope bending fatigue properties, excellent resistance to abrasion and rope crushing.

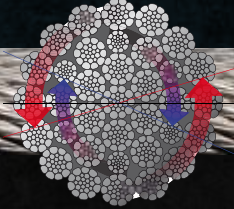


#### ALUMAR® aluminised ropes

The aluminizing of steel wire and steel wire ropes is made by KISWIRE under the brand name ALUMAR®. We apply this technology for about 10 years now, it started in 1999. Initially, the ALUMAR technology was developed for products applied in the aviation and car industry – the core demand was to extend the life time of the wires by sustaining the steel wire quality ! Apart from many different kinds of improvement we could establish in this respect, it was obvious that an important improvement was to be made by protecting the wires from corrosion as long as possible. The ALUMAR® zinc/aluminium coating was developed as an alternative for the regular galvanizing of wire. Many tests have been done in the meantime, showing that the ALUMAR® wires stay corrosion free 3,8 times longer than galvanized products. Third party Salt Spray Tests are available.

The offshore industry, both oil and gas as well as fishing, could benefit from ALUMAR® ropes substantially, as sea water is a corrosive environment.





*SubSea Hoisting Ropes*

**N2® Non-Rotating 35 xK19S Compacted**

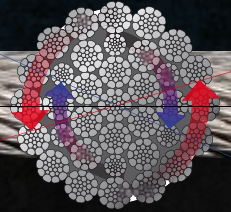
Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
40		782	1327	1463	89	132	101	903
42		861	1463	1612	98	153	116	995
44.5	1 3/4	988	1677	1848	112	188	143	1141
48	1 7/8	1123	1908	2103	128	228	174	1298
50.8	2	1270	2156	2377	144	274	209	1467
54	2 1/8	1424	2418	2665	162	325	248	1645
57.2	2 1/4	1578	2695	2969	180	383	291	1833
63.5	2 1/2	2001	3399	3745	227	542	412	2312
66.7	2 5/8	2259	3834	4225	257	649	494	2608
69.9	2 3/4	2393	4065	4479	272	709	539	2765
73	2 7/8	2606	4419	4870	296	803	611	3006
76.2	3	2825	4789	5278	320	907	690	3258
79.4	3 1/8	3132	5318	5861	355	1060	806	3618

**N2® Non-Rotating 35 xK26WS Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
82.6	3 1/4	3382	5737	6030	382	1076	861	3903
85.7	3 3/8	3631	6164	6478	410	1198	958	4193
88.9	3 1/2	3978	6750	7095	449	1373	1098	4592
95.3	3 3/4	4524	7682	8074	511	1667	1333	5226
102	4	5112	8673	9116	577	1999	1599	5900



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*SubSea Hoisting Ropes*

**N2® Non-Rotating 35 xK7 Compacted**

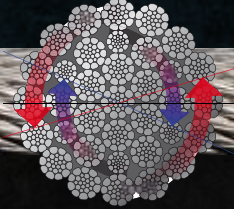
Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
83	3 1/4	3180	5803	5417	382	1098	838	3685
86	3 3/8	3411	6085	5809	410	1193	911	3953
90	3 1/2	3737	6543	6366	449	1343	1025	4331
96	3 3/4	4255	7142	7248	511	1563	1193	4931
102	4	4808	7863	7773	577	1829	1396	5572
108	4 1/4	5388	8700	8711	647	2142	1635	6244

**N2® Non-Rotating 55 xK26WS Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
108	4 1/4	5731	9554	10041	647	759	672	6499
114	4 1/2	6392	10658	11201	721	894	792	7250
121	4 3/4	7204	11995	12607	812	1068	946	8160
127	5	7934	13434	14120	895	1255	1112	9139
133	5 1/4	8702	14510	15251	981	1420	1258	9871
140	5 1/2	9642	16097	16918	1087	1658	1468	10950
142	5 5/8	9919	16795	17652	1119	1755	1554	11425
146	5 3/4	10486	17755	18661	1182	1907	1689	12078
148	5 7/8	10775	18244	19175	1215	1987	1759	12411
152	6	11366	19244	20226	1282	2152	1906	13091







*SubSea Hoisting Ropes*

**N2® Non-Rotating 55 xK7 Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs	Regular	
114	4 1/2	5966	10385	10076	721	894	758	6854
121	4 3/4	6715	11198	10672	812	921	867	7715
127	5	7392	11971	11847	895	1034	973	8492
133	5 1/4	8117	13072	13009	981	1182	1113	9326
140	5 1/2	8988	14276	13707	1087	1359	1279	10326
142	5 5/8	9258	14402	14119	1119	1391	1309	10636
146	5 3/4	9778	15097	14912	1182	1499	1411	11233
148	5 7/8	10054	15455	15333	1215	1555	1464	11550

**N2® Non-Rotating 55 xK19S Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs	Regular	
152	6	11244	19640	17963	1282	2030	1911	12877
154	6 1/8	11523	19656	18408	1316	2058	1937	13195
158	6 3/8	12133	20657	19382	1385	2219	2089	13894
160	6 1/4	12444	20717	19879	1420	2254	2121	14250
165	6 1/2	13244	22033	21157	1510	2472	2327	15166
174	6 7/8	14726	24658	23524	1680	2918	2746	16863
178	7	15406	25544	24612	1758	3092	2910	17643
180		15769	25884	25190	1797	3168	2982	18057

**N2® Non-Rotating 55 xK31WS Compacted**

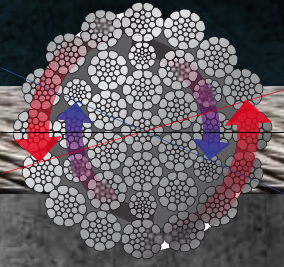
Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs	Regular	
154	6 1/8	11744	19738	20745	1316	2236	1981	13427
158	6 3/8	12367	20784	21845	1385	2416	2140	14139
160	6 1/4	12677	21308	22395	1420	2508	2222	14495
165	6 1/2	13481	22659	23815	1510	2751	2436	15414
174	6 7/8	14991	25194	26480	1680	3225	2857	17139
178	7	15681	26356	27683	1758	3449	3055	17929
180	7 1/8	16028	26939	28296	1797	3565	3158	18326

Torque generated based on 2160 grade  
 Estimated Rope Mass in Sea Water = 0.87 x Rope Mass.  
 All ropes manufactured in accordance with API/EN Standards.



[www.kiswire.com/N2](http://www.kiswire.com/N2)





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## *Crane Ropes*



### **Single and multiple part reeving**

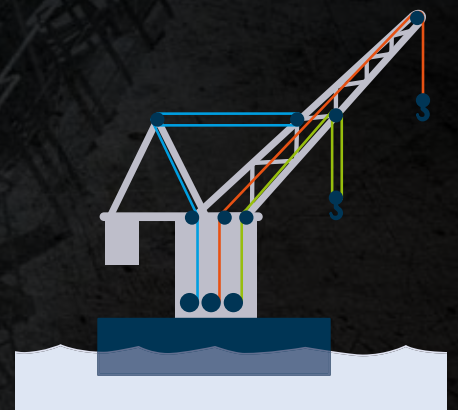
Pedestal cranes may come in different ways as to rope reeving lay outs. We are speaking of multiple part reeved ropes and single part reeved main hoist and whip hoist systems. The multiple part systems may allow to be equipped with six or eight strand ropes in right and left lay version in a tandem, whereas single part systems are almost exclusively equipped with multi strand non rotating ropes.

### **Compacted crane ropes**

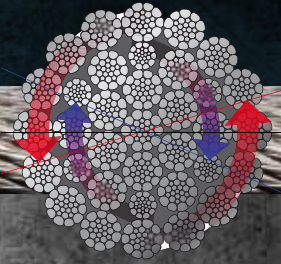
By compacting hoist ropes the resistance to crushing improves substantially. Especially on multi layer drums, wire ropes could interlock between the different layers. By compacting a wire rope, one makes the surface of the outer layers (outer wires) of the rope more flat. This flatter surface leaves the rope with less grip to get hold of. Consequently, layers slide more smooth along each other. Besides, compacted ropes perform better on the surface pressure issue and brings consequently a higher resistance to fatigue.

### **Plastic infill**

In order to improve constructional stability of a rope, the IWRC is extruded with a special plastic medium. When eventually the strands are laid around the IWRC, the plastic finds its final position between strands and IWRC and strands among each other. The plastic infill prevents excessive internal rope wear and prevents dirt and water to penetrate into the rope, at the same time.







### Crane Ropes

#### Special lubricants

For a perfect conservation of wire ropes in harsh environments, it is recommended to protect the rope from corrosion by providing the rope with a special sea water resistant lubricant. Wire rope lubricants are applied to smoothen rope bending and axial torsion as well. Contact between rope and sheave or drum is enhanced by rope lubricants too.



#### ALUMAR® aluminised ropes

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The offshore industry, both oil and gas as well as fishing, could benefit from ALUMAR ropes substantially, as sea water is a corrosive environment.

#### BOOM HOIST ROPES

6xK36WS+IWRC

#### MAIN HOIST ROPES

6XK36WS+IWRC

N2 35xK7,

N2 35xK19S,

N2 35xK26WS,

N2 55xK7,

N2 55xK19S,

N2 55xK26WS,

N2 55xK31WS

#### WHIP HOIST ROPES

N2 35xK7

N2 35xK19S

N2 55xK26WS

#### Average torque factors for the following rope constructions are:

35xK7 non-rotating torque 0.020

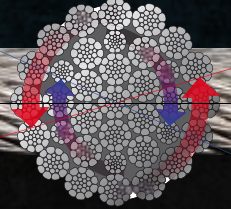
35xK26WS non-rotating torque 0.018

55xK7 non-rotating torque 0.018

55xK31WS non rotating torque 0.018







## Crane Ropes

### N2® Crane Ropes Non-Rotating 35 xK19S Compacted

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
40		782	1327	1463	89	132	101	903
42		861	1463	1612	98	153	116	995
44.5	1 3/4	988	1677	1848	112	188	143	1141
48	1 7/8	1123	1908	2103	128	228	174	1298
50.8	2	1270	2156	2377	144	274	209	1467
54	2 1/8	1424	2418	2665	162	325	248	1645
57.2	2 1/4	1578	2695	2969	180	383	291	1833
63.5	2 1/2	2001	3399	3745	227	542	412	2312
66.7	2 5/8	2259	3834	4225	257	649	494	2608
69.9	2 3/4	2393	4065	4479	272	709	539	2765
73	2 7/8	2606	4419	4870	296	803	611	3006
76.2	3	2825	4789	5278	320	907	690	3258
79.4	3 1/8	3132	5318	5861	355	1060	806	3618

### N2® Crane Ropes Non-Rotating 35 xK26WS Compacted

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
82.6	3 1/4	3382	5737	6030	382	1076	861	3903
85.7	3 3/8	3631	6164	6478	410	1198	958	4193
88.9	3 1/2	3978	6750	7095	449	1373	1098	4592
95.3	3 3/4	4524	7682	8074	511	1667	1333	5226
102	4	5112	8673	9116	577	1999	1599	5900

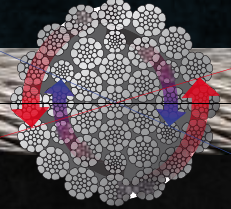
Torque generated based on 2160 grade

Estimated Rope Mass in Sea Water = 0.87 x Rope Mass.

All ropes manufactured in accordance with API/EN Standards.







*Crane Ropes*

**N2® Crane Ropes Non-Rotating 55 xK31WS Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
154	6 1/8	11744	19738	20745	1316	2236	1981	13427
158	6 3/8	12367	20784	21845	1385	2416	2140	14139
160	6 1/4	12677	21308	22395	1420	2508	2222	14495
165	6 1/2	13481	22659	23815	1510	2751	2436	15414
174	6 7/8	14991	25194	26480	1680	3225	2857	17139
178	7	15681	26356	27683	1758	3449	3055	17929
180	7 1/8	16028	26939	28296	1797	3565	3158	18326

**N2® Crane Ropes Non-Rotating 55 xK26WS Compacted**

Nominal Diameter		Approx Weight kg/100m	MBL 1960 kN	MBL 2160 kN	Axial Stiffness @ 20% MBL MN	Torque Generated @ 20% MBL		Metallic Area mm <sup>2</sup>
mm	inch					Langs N.m	Regular N.m	
108	4 1/4	5731	9554	10041	647	759	672	6499
114	4 1/2	6392	10658	11201	721	894	792	7250
121	4 3/4	7204	11995	12607	812	1068	946	8160
127	5	7934	13434	14120	895	1255	1112	9139
133	5 1/4	8702	14510	15251	981	1420	1258	9871
140	5 1/2	9642	16097	16918	1087	1658	1468	10950
142	5 5/8	9919	16795	17652	1119	1755	1554	11425
146	5 3/4	10486	17755	18661	1182	1907	1689	12078
148	5 7/8	10775	18244	19175	1215	1987	1759	12411
152	6	11366	19244	20226	1282	2152	1906	13091

Torque generated based on 2160 grade

Estimated Rope Mass in Sea Water = 0.87 x Rope Mass.

All ropes manufactured in accordance with API/EN Standards.



[www.kiswire.com/N2](http://www.kiswire.com/N2)