ÇELİK HALAT

PARALLEL CLOSED
WIRE ROPES
CelikFill

STEEL WIRE ROPES

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Sustainable Smarter Solutions

Parallel Closed Ropes (CelikFill):

"CelikFill" ropes with 8 outer strands with parallel structure, used in equipment with high strength requirements.

Non-parallel ropes are ropes in which the steel core and strands have different lay lengths. In parallel structured ropes, steel core and rope are produced at the same time and the rope is produced in equal lay length. This ensures homogeneous pressure distribution and linear contact between the wires. At the same time, it has an extra strength value thanks to its high fill factor.

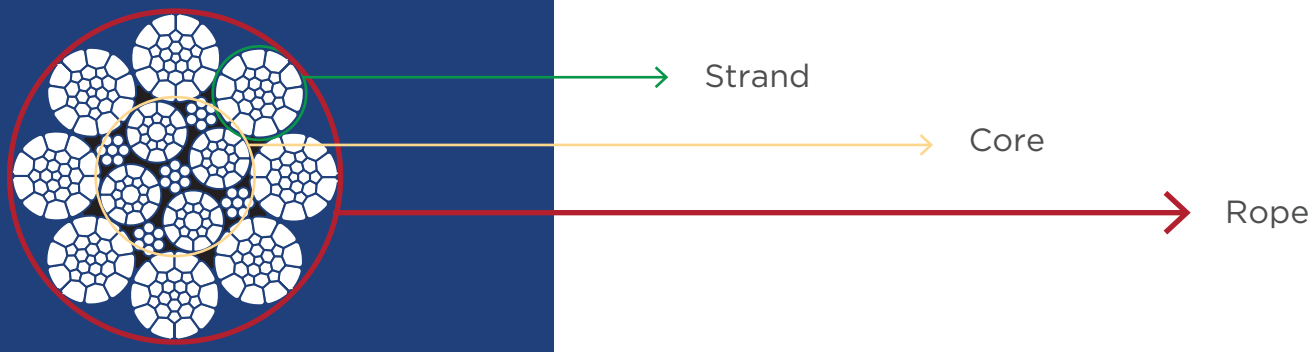


Fig. 1: CelikFill Parallel Closed Rope Cross-Section

In parallel structured ropes, the contacts between wires are different compared to standard ropes. Standard ropes have point contacts due to different lay length values and directions. Deformation occurs at these contact points due to high pressure. In parallel structured ropes, the direction and step values are the same and the pressure is distributed in a balanced way by leaving the point contact point to linear contact.

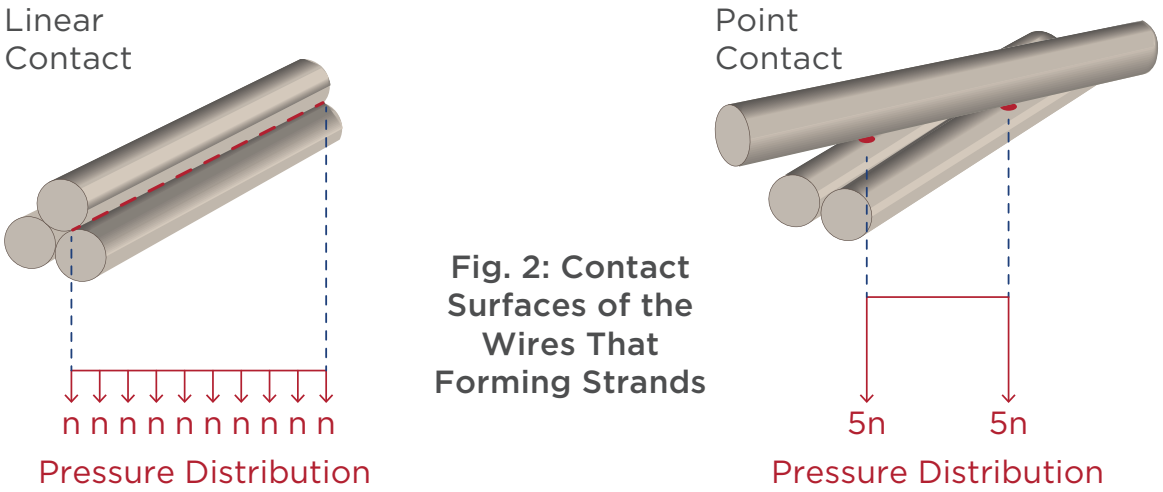
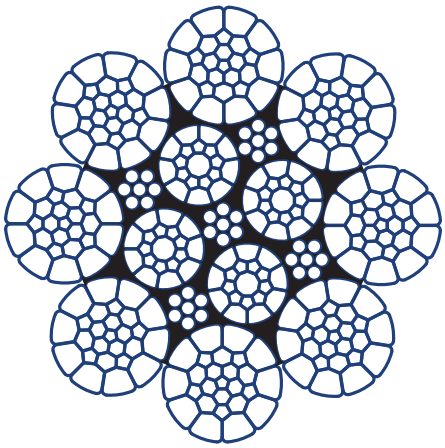


Fig. 2: Contact Surfaces of the Wires That Forming Strands

Please contact our sales officials for detailed information.

8 x 26 WS PWRC COMPACT PARALLEL CLOSED ROPES



Ultra High Breaking Force

No Swivel

Lubricate

Compacted

Parallel Array

CelikFill 8 x 26 WS PWRC Compact									
Rope Diameter (mm)	Unit Weight kg/m	Minimum Breaking Load (kN)			Rope Diameter (mm)	Unit Weight kg/m	Minimum Breaking Load (kN)		
		1770 [N/mm²]	1960 [N/mm²]	2160 [N/mm²]			1770 [N/mm²]	1960 [N/mm²]	2160 [N/mm²]
10	0,473	79,7	88,2	97,2	26	3,197	538	596	657
11	0,572	96,4	107	118	27	3,448	581	643	709
12	0681	115	127	140	28	3,708	624	691	762
13	0,799	135	149	164	29	3,978	670	742	817
14	0,927	156	173	191	30	4,257	717	794	875
15	1,064	179	198	219	31	4,546	765	848	934
16	1,211	204	226	249	32	4,844	816	903	995
17	1,367	230	255	281	33	5,151	867	960	1059
18	1,533	258	286	315	34	5,468	921	1020	1124
19	1,708	288	318	351	35	5,794	976	1080	1191
20	1,892	319	353	389	36	6,130	1032	1143	1260
21	2,086	351	389	429	37	6,475	1090	1207	1331
22	2,289	386	427	470	38	6,380	1150	1274	1404
23	2,502	421	467	514	39	7,194	1211	1342	1478
24	2,724	459	508	560	40	7,568	1274	1411	1555
25	2,956	498	551	608					

FEATURES

- Parallel Lay for Wire And Strand
- Ultra High Strength
- High Lifetime Performance
- Bright and Galvanised Wires

USAGE AREAS

- Container Crane
- Offshore Crane
- Harbour Crane
- Mobile Crane

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ÇELİK HALAT

ROTATION RESISTANT
WIRE ROPES
CelikFlex

STEEL WIRE ROPES

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Sustainable Smarter Solutions

“

Rotation Resistant and Semi Rotation Resistant Wire Ropes:

When the helically-shaped wire ropes are subjected to load, two types of forces are generated. These are tensile and torque forces. Tensile forces are present along with the axis of strand and these forces cause elongation of the wire ropes with increasing load. Torque forces are present in the tangential direction of the rope axis and these forces cause the moment that tend to rotate the rope around its axis. With increasing load and high lifting heights, the rope starts to rotate around its axis and unlay itself in order to eliminate the torque. Wire rope construction generates torque between layers and this torque increases with applied load. If the wire rope is used in high lift applications, conventional 6 or 8 stranded wire ropes are twisted as shown in figure 1.

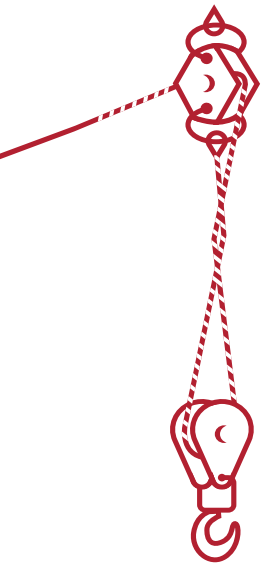

Fig. 1: Rotation of Conventional 6 Stranded Ropes in High Lifting Applications

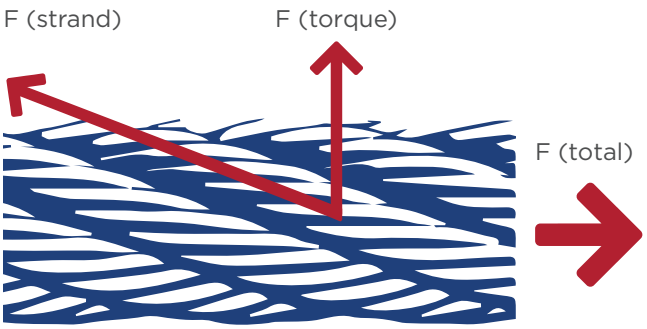

Fig. 2: Torque Generated due to the Applied Force on Conventional 6 Stranded Ropes

Wire ropes are classified in three groups according to ISO 21669 and DIN EN 12385-3 in terms of its rotational characteristics of a 1000 x d length rope under load. These are;

- Ropes, rotating more than 1440 degrees under load, are defined as "not rotation resistant".
- Ropes, rotating between 360 and 1440 degrees under load, are defined as "semi rotation resistant".
- Ropes, rotating below 360 degrees under load, are defined as "rotation resistant".

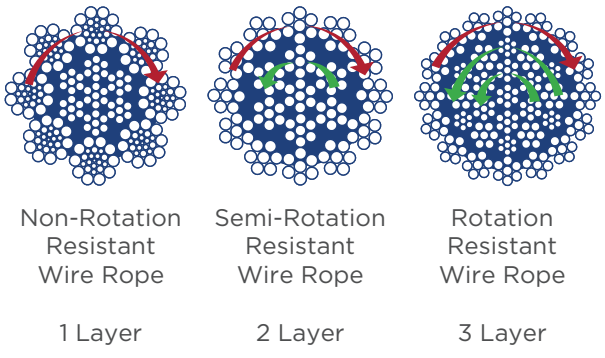

Fig. 3: Rotational Behavior in Different Constructions

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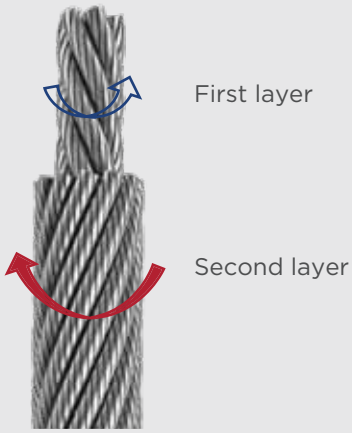


Fig. 4:
Rotation Behaviour of (Semi) Rotation Resistant Wire Ropes

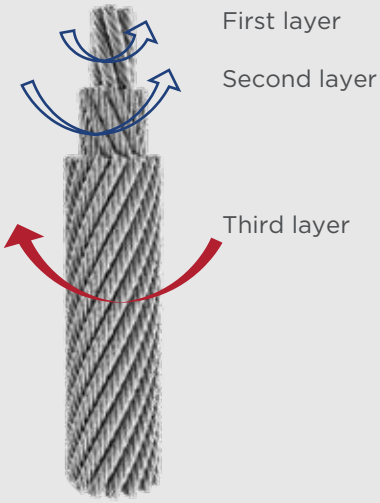


Fig. 5:
Rotation Behaviour of Rotation Resistant Wire Rope

Rotation resistant wire ropes are designed for the purpose of balancing the torque. Principally, these wire ropes are designed with 2 or 3 layers; the independent wire rope core (IWRC) and outer strands (one or two layers). These layer's lay directions are opposite to each other.

The outer layer is twisted in the reverse direction with respect to inner layers to generate counter acting torsional forces. By this way, outer layer torque forces are eliminated by the inner layer torque forces. Once the load is applied, the rope will not rotate (or rotate to some extent with conforming to rotation angle given below).

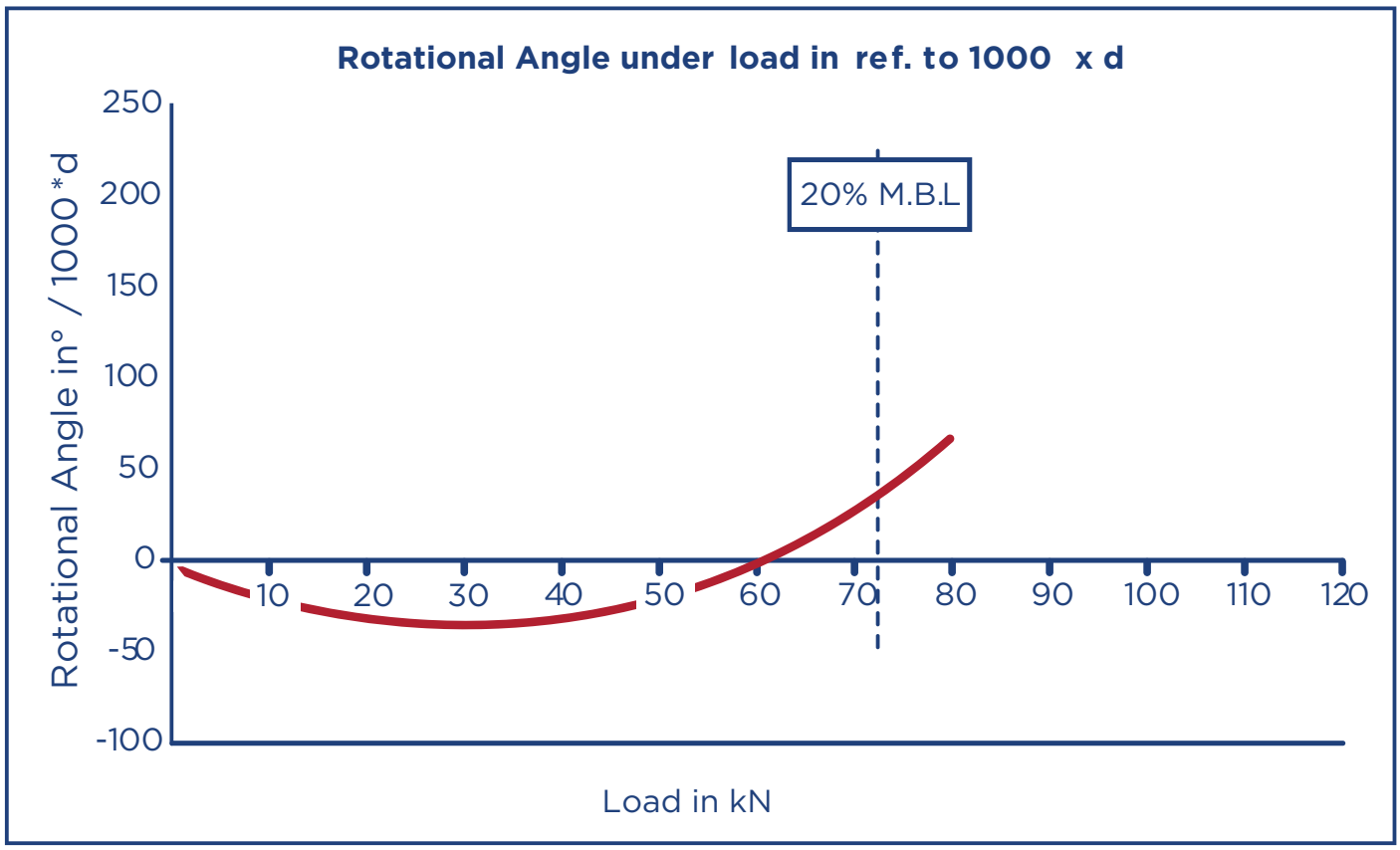


Chart 1: Shows the Results of Rotation Angle Behavior Under the Load

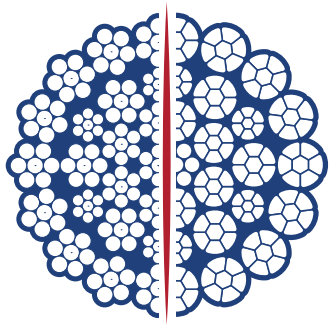
Please contact our sales officials for detailed information.

ÇELİK HALAT

35 x 7 ROTATION RESISTANT WIRE ROPES

CelikFlex 357 PWRC

Diameter Range: 10-40(mm)
Number Of Wires: 245
Average Fill Factor: 0,594
Average Spin Factor: 0,758



CelikFlex K357 PWRC

Diameter Range: 10-40(mm)
Number Of Wires: 245
Average Fill Factor: 0,654
Average Spin Factor: 0,758

Swivel Tolerance Lubricate Preformed

Very High Breaking Force Compacted Swivel Tolerance Lubricate Preformed

35 x 7 WSC [(1+6)+6(1+6)+6x(1+6)/6(1+6)+16(1+6)]

Rope Dia. (mm)	Unit Weight (kg/m)	Minimum Breaking Load (kN) [Acc to Wire Tensile Strenght]			
		1570 [N/mm2]	1770 [N/mm2]	1960 [N/mm2]	2160 [N/mm2]
10	0,454	59,3	66,9	74,1	75,6
11	0,549	71,8	81,0	89,6	91,5
12	0,654	85,5	96,3	107	109
13	0,767	100	113	125	128
14	0,890	116	131	145	148
15	1,022	134	151	167	170
16	1,162	152	171	190	194
17	1,312	172	193	214	218
18	1,471	192	217	240	245
19	1,639	214	242	267	273
20	1,816	237	268	296	302
21	2,002	262	295	327	333
22	2,197	287	324	359	366
23	2,402	314	354	392	400
24	2,615	342	385	427	435
25	2,838	371	418	463	473
26	3,069	401	452	501	511
27	3,310	433	488	540	551
28	3,559	465	525	581	593
29	3,818	499	563	623	636
30	4,086	534	602	667	680
32	4,649	608	685	759	774
34	5,248	686	773	856	874
36	5,884	769	867	960	980
38	6,556	857	966	1.070	1.092
40	7,264	950	1.070	1.185	1.210

35 x 7 WSC Compact [(1+6)+6(1+6)+6x(1+6)/6(1+6)+16(1+6)]

Rope Dia. (mm)	Unit Weight (kg/m)	Minimum Breaking Load (kN) [Acc to Wire Tensile Strenght]			
		1570 [N/mm2]	1770 [N/mm2]	1960 [N/mm2]	2160 [N/mm2]
10	0,479	70,0	78,9	87,4	89,2
11	0,580	84,7	95,5	106	108
12	0,690	101	114	126	128
13	0,809	118	133	148	151
14	0,939	137	155	171	175
15	1,078	158	178	197	201
16	1,226	179	202	224	228
17	1,384	202	228	253	258
18	1,552	227	256	283	289
19	1,729	253	285	316	322
20	1,916	280	316	350	357
21	2,112	309	348	386	393
22	2,318	339	382	423	432
23	2,534	370	418	462	472
24	2,759	403	455	504	514
25	2,994	438	493	546	558
26	3,238	473	534	591	603
27	3,492	511	576	637	650
28	3,755	549	619	685	699
29	4,028	589	664	735	750
30	4,311	630	711	787	803
32	4,905	717	808	895	913
34	5,537	810	913	1011	1031
36	6,207	908	1023	1133	1156
38	6,916	1011	1140	1262	1288
40	7,664	1120	1263	1399	1427

DESCRIPTION

- Celik Flex 357 is suitable rope for high lifting height application with rotation resistance.
- High breaking load force
- Compacted strands
- Resistance to crushing with compacted strands
- Ensure rotational stability and flexibility
- Available in lang lay or ordinary lay
- Available in right hand and left hand
- Available lubricated and can be made out of galvanized/ungalvanized wires
- Available for multi-layer spooling

SUITABLE APPLICATIONS

- Main and whip hoist rope for towercranes
- Mobile cranes
- Off shore crane
- Pillar crane
- Available for high lifting

Please contact our sales officials for detailed information.

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ÇELİK HALAT

PARALLEL
SWAGE WIRE ROPES
CelikForest Plus

STEEL WIRE ROPES

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Sustainable Smarter Solutions

Parallel Swage Wire Ropes (CelikForest Plus):

"CelikForest Plus" These ropes used in equipment where high abrasion resistance and long life are required.

Non-parallel swage ropes by design have a cross contact between the steel core and the strands. For this reason, the pressure distribution on the cross-contact surfaces after the swage process is not homogeneous. This has a negative effect on the life performance of the rope.

Parallel swage ropes are different from standard swage ropes in terms of contact surface. Standard ropes have point contacts due to different pitch values and directions. Deformation occurs at these contact points due to high pressure.
The direction and lay values are the same in parallel constructions wire ropes. For this reason, a balanced distribution of pressure is achieved thanks to the linear contact instead of the point contact. Below is a sample demonstration.

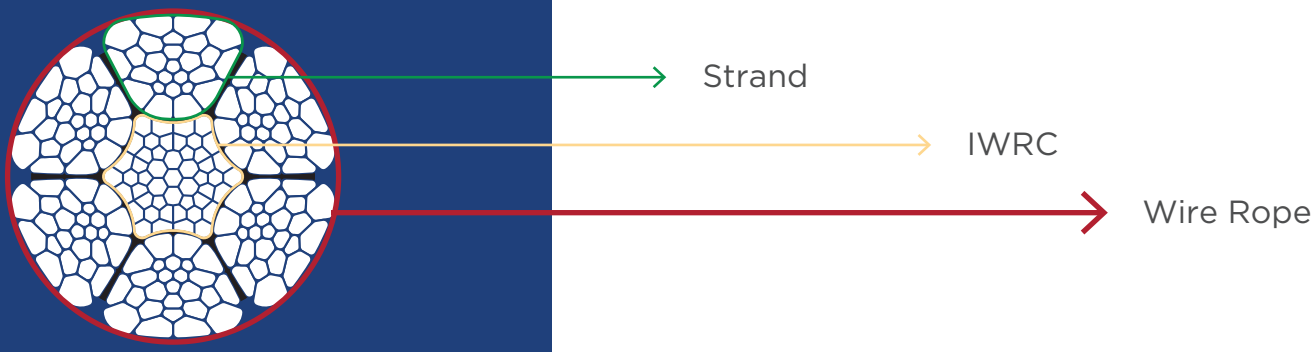


Fig. 1: CelikForest Plus Parallel Closed Rope Cross-Section

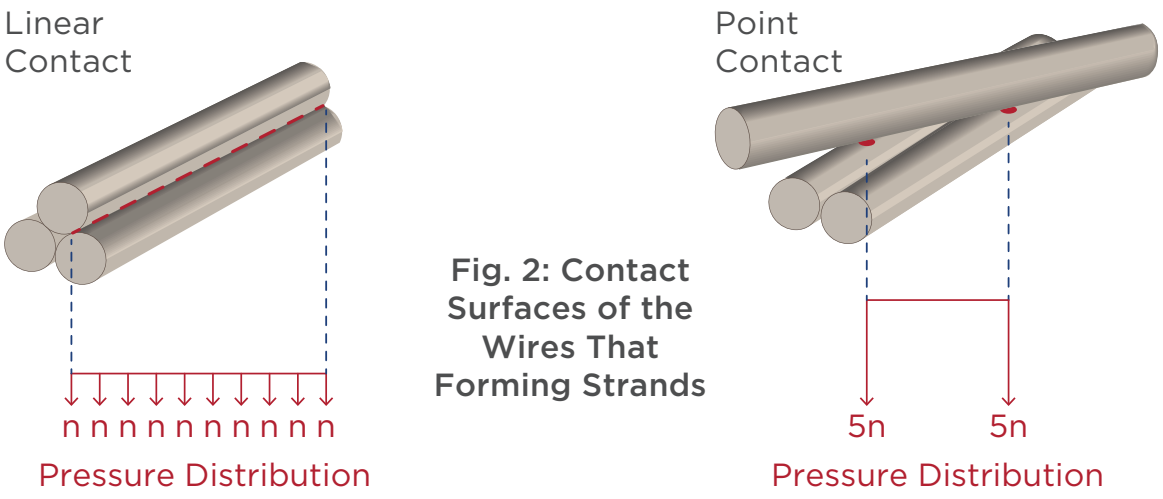


Fig. 2: Contact Surfaces of the Wires That Forming Strands

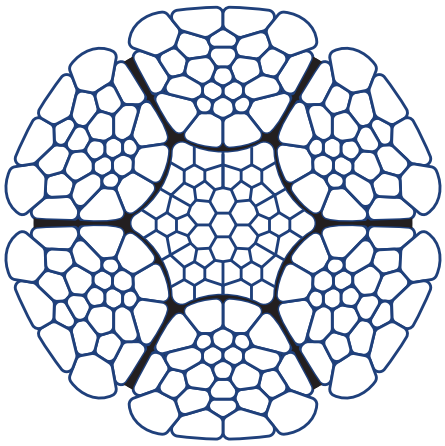
Please contact our sales officials for detailed information.

6 x 26WS PWRC PARALLEL SWAGE WIRE ROPES

Ultra High Breaking Force

No Swivel

Swaged



Lubricate

Compacted

Parallel Array

CelikForest Plus 6x26WS PWRC					
Regular Swage			Premium Swage		
Rope Diameter (mm)	Unit Weight (kg/m)	MBL (kN) 1960 [N/mm2]	Rope Diameter (mm)	Unit Weight (kg/m)	MBL (kN) 1960 [N/mm2]
8	0.361	59.3	8	0.361	66.1
9	0.441	73.3	9	0.458	80.8
10	0.529	96.9	10	0.576	106
11	0.625	114	11	0.676	124
12	0.729	134	12	0.841	144
13	0.841	154	13	0.961	165
14	0.961	176	14	1.089	188
15	1.089	199	15	1.225	212
16	1.225	224	16	1.444	237
17	1.369	251	17	1.600	264
18	1.521	279	18	1.764	293
19	1.681	308	19	1.936	323
20	1.849	339	20	2.120	354
21	2.025	371	21	2.337	390
22	2.209	405	22	2.565	428
24	2.592	474	24	3.053	510
26	3.042	556	26	3.583	598

FEATURES

- Parallel Lay for Wire And Strand
- Ultra High Strength
- High Lifetime Performance
- Bright and Galvanised Wires

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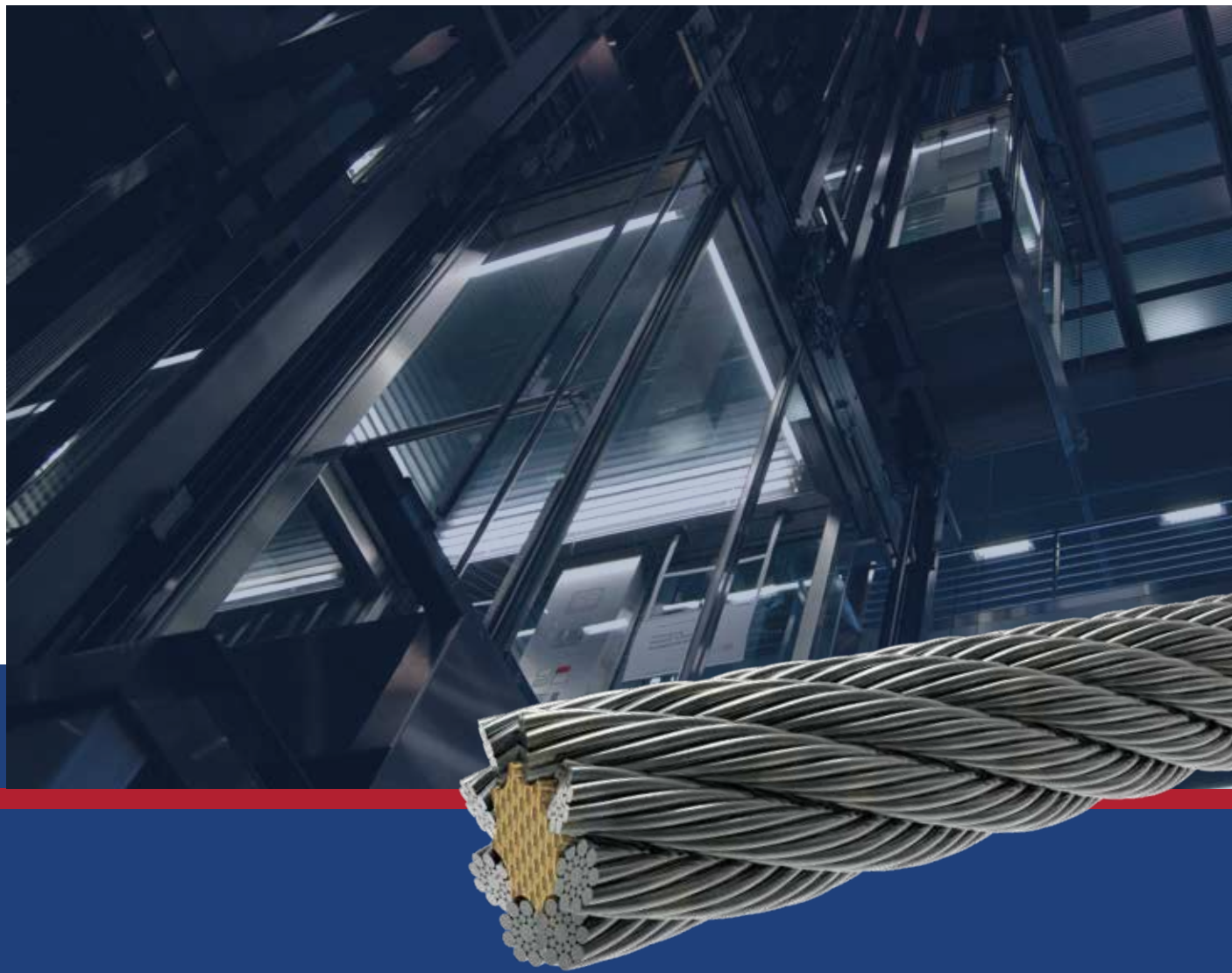
ÇELİK HALAT

PRE-STRETCHED ELEVATOR
WIRE ROPES
CelikLift+

STEEL WIRE ROPES



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Sustainable Smarter Solutions

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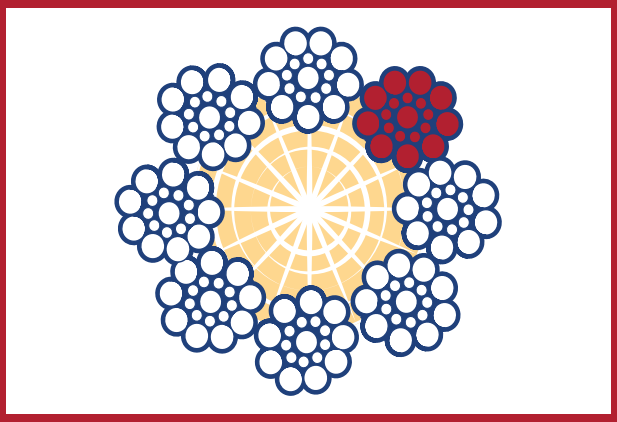
Pre-Stretched Elevator Wire Ropes:

Elongation of wire ropes is one of the most significant issues encountered during the use of elevators. Running of the wire ropes on the sheaves, loading / unloading and acceleration / deceleration of elevators give rise to elongation of ropes. Rope elongation is segregated to 2 main parts as constructional elongation (Permanent Elongation) and elastic elongation.



Pic. 1: Red Strand Wire Rope

Permanent elongation is directly depends on the rope’s design. Loose wire and strands resettles and starts to compress the core. After a while, core and strands come closer and then a slight diameter reduction and lenghthening of wire ropes takes place due to the helically shaped structure of wire ropes. Elongation, called as elastic elongation, is the elongation of the wires till the value of its yield strength. This elongation is completely recoverable during unloading.

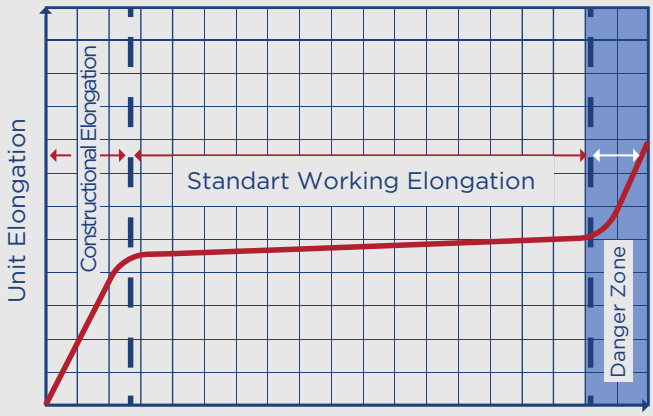


Fig. 1: Rope’s Elongation Behaviour

Permanent Elongation causes;
1) Requirement of shortening of the ropes after working of elevator cars, in short period.
2) The rope elongation under load affects the deflection of the elevator car to floor level during loading and unloading. Therefore re-levelling of elevator car to floor level is needed.

Due to the elongation of elevator wire ropes during use, state-of-art design pre-stretched elevator wire ropes are recommended on lifting systems.

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How to Manufacture Pre-Stretched Elevator Wire Ropes?

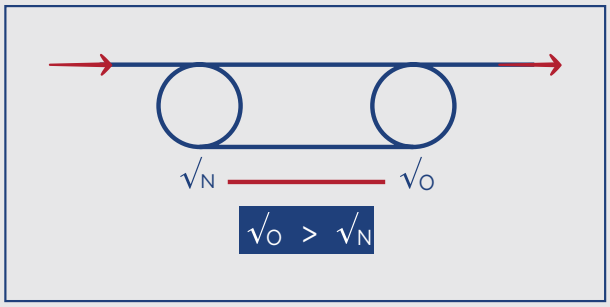


Fig. 2: Double Capstan System

On this point, it is required to subject wire ropes to stretching during manufacturing period. In order to manufacture pre-stretched wire rope, double capstan system is required stretched between these two capstans.

According to ISO 4344, where rope is supplied in the pre-stretched condition, in order to avoid rope damage, the maximum load to which the rope shall be subjected during the pre-stretching process shall not exceed 55% of the minimum breaking force of the rope.

Test Procedure of Wire Rope's Elongation

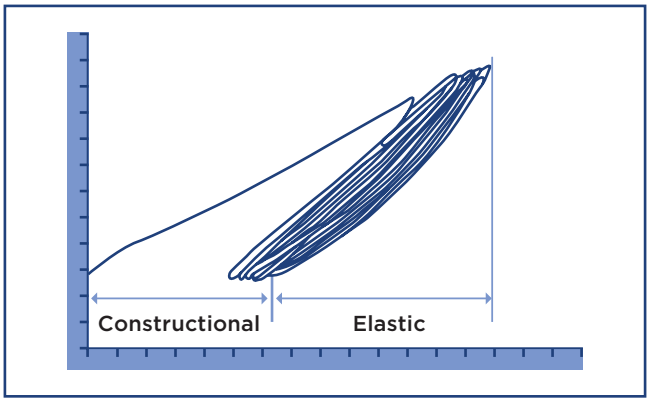


Fig. 3: Elongation Test Diagram

Test consist of 10 loading steps. After attaching of rope to elongation test system, rope is stretched up to 3% of minimum breaking load of the wire rope and lenght of ropes is measured, this measure is "ℓ0". Then it is stretched up to 10% of its breaking load. This operation is repeated 10 times Prior to the 10th loading, rope should be hold at 3% of minimum breaking load and its lenght is measured, this length is "ℓ1". At the end of the 10th loading, rope length should be recorded last time. This length is "ℓ2".

Constructional Stretch

$$\delta c = (\ell_1 - \ell_0) / \ell_0 \times 100\ \%$$

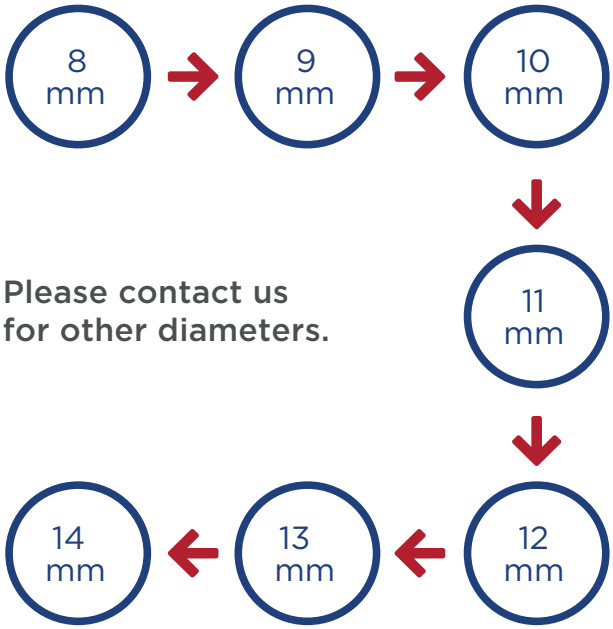
Elastic Stretch

$$\delta E = (\ell_2 - \ell\ )\quad \ell \times 100\ \%$$

Number of strands in wire ropes and types of core effects elongation performance of ropes on usage. 6-strand wire ropes has slightly lower permanent elongation than 8-strand wire ropes. With wire strand core (WSC) and independent wire rope core (IWRC) wire ropes have lowest elongation performance.
For 8-strand pre-stretched elevator wire ropes with natural fibre core, constructional and elastics elongations were mentioned below.

In order to produce the best performing rope in terms of elongation behaviour, several methods are used for manufacturing of pre-stretched elevator wire ropes.

As a result of these trials;
Our pre-stretched elevator wire ropes shows elongation performance under 0,3 %. As a leading manufacturer of steel wire rope in industry, Çelik Halat ve Tel Sanayii A.Ş. has been manufacturing pre-stretched elevator wire ropes with diameter from 8 mm to 14 mm.



Please contact us for other diameters.

	Standard Elevator Wire Ropes Elongation	Standard Pre-Stretched Elevator Wire Ropes Elongation	Çelik Halat's Pre-stretched Elevator Wire's Elongation
Construction Stretch	< 0,6 %	< 0,4 %	< 0,3 %
Elastic Stretch	< 0,2 %	< 0,2 %	< 0,2 %

Please contact our sales officials for detailed information.

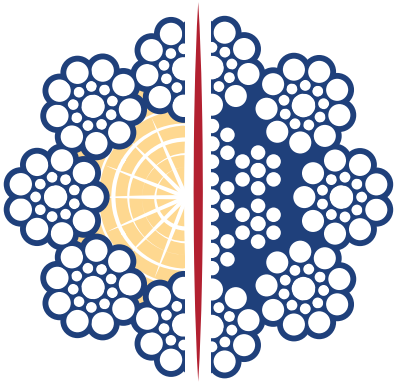
ÇELİK HALAT

8 x 19 S PRE-STRETCHED ELEVATOR WIRE ROPE

CelikLift 819+

Diameter Range: 8-14(mm)
Number Of Wires: 152
Average Fill Factor: 0,444
Average Spin Factor: 0,839

No Swivel Tolerance Lubricate Preformed



CelikLift 819+ IWRC

Diameter Range: 8-14(mm)
Number Of Wires: 201
Average Fill Factor: 0,581
Average Spin Factor: 0,779

No Swivel Tolerance Lubricate Preformed

8 x 19S FC 8[1+9+9]			Minimum Breaking Load (kN) [Acc to Wire Tensile Strength]		
Rope Dia. (mm)	Dia. Tolerance (%)	Unit Weight (kg/m)	1370/1770 [N/mm2]	1770 [N/mm2]	1960 [N/mm2]
8	+5	0,218	29,4	33,2	36,8
9		0,275	37,3	42,0	46,5
10		0,340	46,0	51,9	57,4
11		0,411	55,7	62,8	69,5
12		0,489	66	74,7	82,7
13		0,574	78	87,6	97,1
14		0,665	90	102	113

8 x 19S IWRC 8[1+9+9]			Minimum Breaking Load (kN) [Acc to Wire Tensile Strength]		
Rope Dia. (mm)	Dia. Tolerance (%)	Unit Weight (kg/m)	1370/1770 [N/mm2]	1770 [N/mm2]	1960 [N/mm2]
8	+5	0,260	35,8	40,3	44,7
9		0,330	45,3	51,0	56,5
10		0,407	55,9	63,0	69,8
11		0,493	67,6	76,2	84,4
12		0,587	80	90,7	100
13		0,689	94	106	118
14		0,799	110	124	137

Please contact our sales officials for other diameters and detailed information.

6-strand wire ropes has slightly lower permanent elongation than 8-strand pre-stretched elevator wire ropes with natural fibre core.

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ÇELİK HALAT

PLASTIC COATED (EPIWRC)
WIRE ROPES
CelikPlast

STEEL WIRE ROPES

celikhalat.com.tr

Sustainable Smarter Solutions

Why Plastic Coated EPIWRC Wire Ropes Are Needed?

Standard steel wire ropes are subjected to wear as a result of contact between the core and the strands. In addition, the environmental effects in the application area cause the rope to corrode over time. Standard IWRC wire ropes have a limited service life because of external impacts and adhesive wear.

Figure 1 shows the zones where the wear occurs on the ropes.

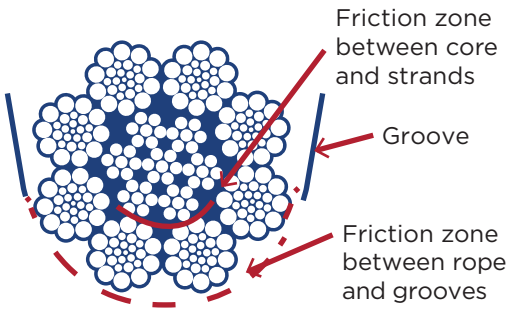

Fig. 1: Friction Zones

During the operation of the rope, friction occurs between the strands and the core of the steel rope which causes the rope to wear over time and eventually leads it to break.

How Does the Plastic Coating Protect the Ropes?

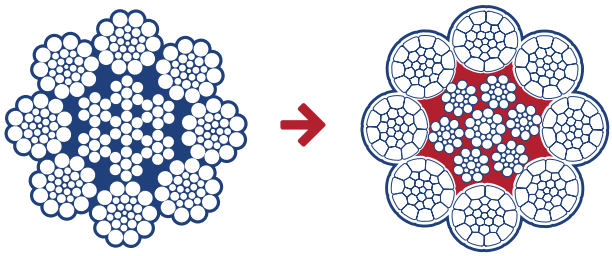

Fig. 1: Plastic Coating of Steel Core

Plastic coated (EPIWRC) steel wire ropes provide high strength and high abrasion resistance through its special design.

Plastic layer;

- Prevents contact between core and strands
- Prevents internal wire breaks
- Provides sealing of the lubricant
- Keeps out water and abrasive elements
- Acts as a cushion between the layers
- Creates a more stable structure in installation
- Absorbs dynamic energy
- Enables working at lower noise
- Reduces (or even prevents) the birdcage

In this way, ropes with longer service life than non-plastic coated ropes of the same diameter and construction are obtained.

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These plastic coated ropes are designed for use in areas where superior performance is needed. After plastic coating of the steel core, and product is obtained by special closing process.

Figure 3 shows the form of the plastic coating between the steel core and the strands.

Fig. 3: Form of The Plastic Coating

Çelik Halat has a cooperation agreement with the Technical University of Dresden on Laboratory and Testing Services. Within the scope of this agreement, tests were performed on plastic coated steel wire ropes at Dresden Technical University.

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TECHNISCHE UNIVERSITÄT DRESDEN

As a result of the tests;

•In comparison with the theoretical estimation of the service life and the lifetime of running wire ropes acc. to Method Leipzig, the rope has exceeded the expectations.

•The occurence of wire breaks is evenly distributed in all three bending zones.

•The measured reduction of the diameter during the bending fatigue test does not show any notice able characteristics. The same applies to the rope elongation during the test procedure.

•Ropes have some residual life time between the discarding stage and the rope failure.

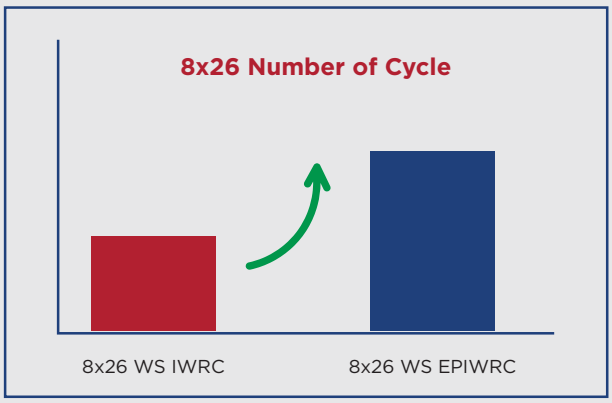


Chart 1. Number of Cycles for the 26 mm 8x26WS Rope Before Being Discarded From the System

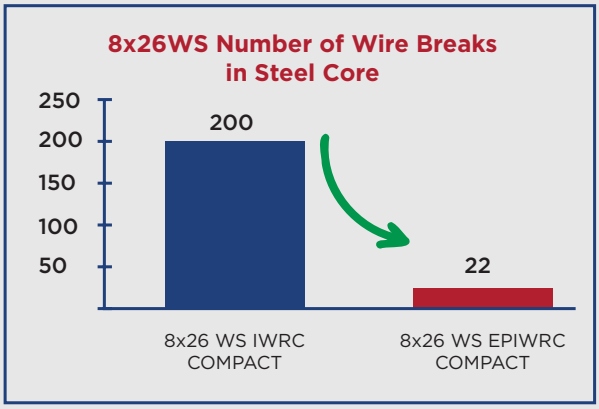
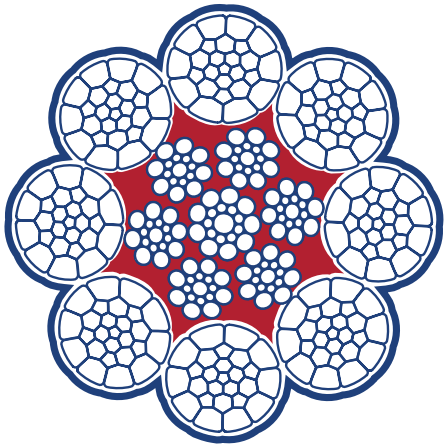


Chart 2. 26 mm 8x26WS Number of Wire Breaks in Steel Core

As a result of the tests conducted on 8x26WS Plastic Coated (EPIWRC) Stell Wire Rope of Çelik Halat, a significant decrease was observed in the wirebreak ages occurring in the steel core.

Plastic coating of the steel core provides products with longer service life and higher strength. It is also seen that plastic coating protects the steel core.



“Plastic Coated Wire Ropes

EPIWRC ropes are produced in different constructions as **6 and 8 strands**. It can be used in heavy duty applications with its high abrasion resistance and high strength properties.

Please contact our sales officials for detailed information.

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CELIKPLAST K826 EPIWRC MBL TABLE

Rope Diameter (mm)	Unit Weight (kg/m)	Minimum Breaking Load (kN) [According to Wire Tensile Strength]		
		1770 (N/mm²)	1960 (N/mm²)	2160 (N/mm²)
20	1.960	312	345	380
21	2.161	343	380	419
22	2.372	377	417	460
23	2.592	412	456	503
24	2.822	449	497	547
25	3.063	487	539	594
26	3.312	526	583	642
27	3.572	568	629	693
28	3.842	611	676	745
29	4.121	655	725	799
30	4.410	701	776	855
32	5.018	797	883	973
34	5.664	900	997	1.100
36	6.350	1.010	1.120	1.1230
38	7.076	1.120	1.250	1.370
40	7.840	1.250	1.380	1.520
42	8.644	1.370	1.520	1.680
44	9.486	1.510	1.670	1.840
46	10.368	1.650	1.820	
48	11.290	1.790	1.990	
50	12.250	1.950	2.160	
52	13.250	2.110	2.330	

PROPERTIES

- Bending Fatigue Resistance
- Self Lubrication
- Excellent Compaction
- Regular or Lang Lay Rope
- Plastic Coating
- High Breaking Resistance

USAGE AREAS

- Trolley Ropes
- Hoist Ropes
- Boom Ropes
- Grab Excavators
- Loading Bridges

Please contact us for different structures in 6 and 8 strands.

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ÇELİK HALAT

COMPACTED
WIRE ROPES

STEEL WIRE ROPES

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Sustainable Smarter Solutions

Compact Steel Wire Ropes:

Ropes are produced by the closing process of strands with different mechanical properties and lay ratios; strands are produced from wires of different diameters and numbers.

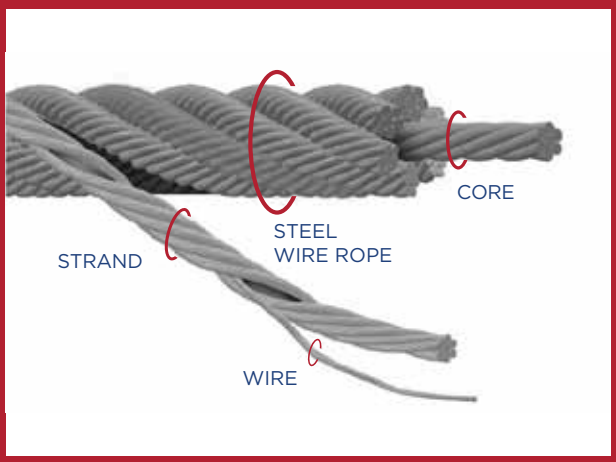

Fig. 1: Steel Wire Rope

Steel wire ropes produced in different constructions and properties are used in a wide range of sectors.

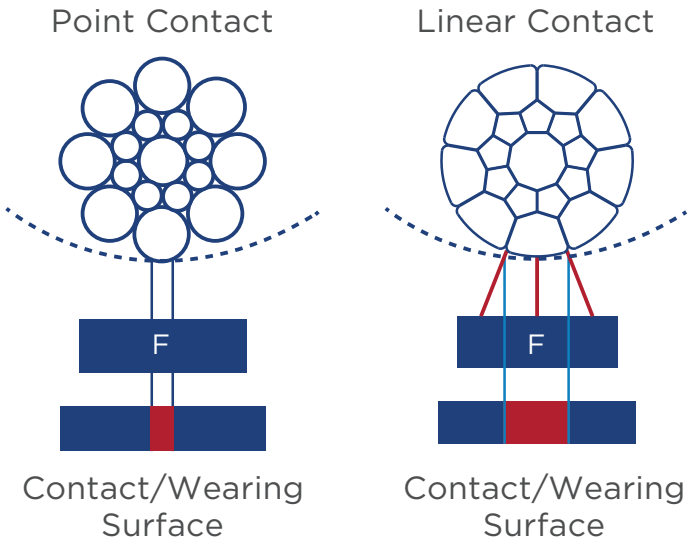

Fig. 2: Increasing of Contact Surface Area

Why is Compact Rope Preferred?

The wires of non-compact ropes which as shown in Fig. 2 have point contact with each other. Compact ropes are produced with reducing the diameter of the strands by the rolling system. Since the strands are subjected to a certain amount of force, their contact between each other change from circular to linear shape. In this way, the contact surface of wire to wire and strand to strand are expanded. Although applied load on the rope is constant, the pressure force applied on the wires will decrease due to the increase of the contact surface area. This will improve the service life of the rope by extending the wearing time of the wires.

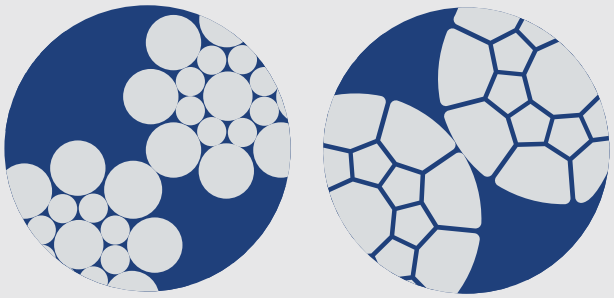

Fig. 3: Contact Between Strands

Due to the linear surface of wires, the strands a have linear contact with each other. In this way, the friction surface areas of the wires are expanded and this prevents the ropes from short wearing time.

Please contact our sales officials for detailed information.

In order to obtain the same diameter, stranding is done with thicker wires in compact steel wire ropes with respect to non-compact steel wire ropes. As a result, compact steel wire ropes have a greater metallic cross-sectional area and higher breaking forces.

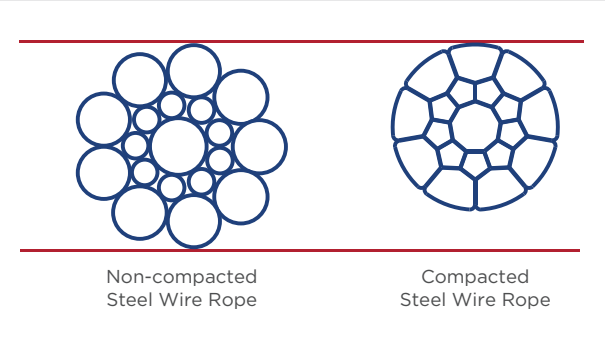

Fig. 4: Reducing of Diameter

In compacted wire rope production, the traditional rolling system was switched to the compact hydraulic rolling system. In the production with traditional system, the wires are exposed to higher levels of wear. As a result of abrasion of the outer wires, the life performance of the rope is adversely affected. In order to eliminate these negative effects, production is performed with hydraulic rolling system.

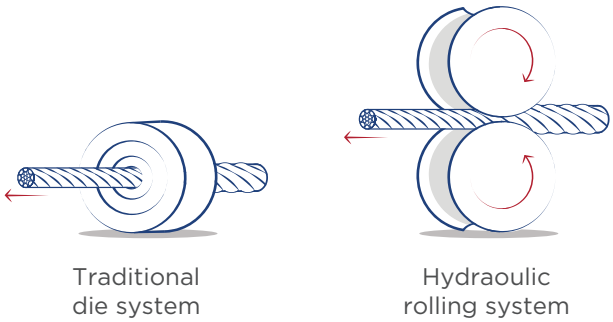

Fig. 5: Rolling System

Fig. 6: Image of a strand of wires compressed by disc compacting

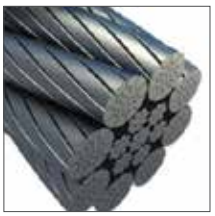

Fig. 7: 3D Drawing of Compact Steel Wire Rope

In the hydraulic rolling disc system, a hydraulic pressure is applied to the strands. Since discs are rotating during production, the wear of the strands is prevented. This improvement directly increases the life performance. In addition, by means of a gradual reduction in diameter of strands, the hydraulic disc system allows the use of thicker wires. Thus, metallic cross-sectional area is increased. The increase of the metallic cross-sectional area increases the strength of steel wire ropes directly.

Minimum Breaking Load (kN) (According to 1960N/mm² Wire Tensile Strenght)	
non compact steel wire ropes	compact steel wire ropes
Breaking Load (kN) **715 kN**	Breaking Load (kN) **900 kN**

Table 1: Breaking Test result of Ø32mm 6x36WS-IWRC

As a result of gradually reducing the diameter of the strand, abrasion of the wires are prevented. Compact steel wire ropes are produced with higher surface quality. The prototypes which were produced with rolling system were subjected to breaking tests. It was found that our 32 mm 6x36 WS compact ropes gives a rate of 26% breaking load increase compared to non-compacted ropes and a rate of 10% breaking load increase compared to traditional compacted ropes of the same diameter and structure.

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ÇELİK HALAT

ROTATION RESISTANT
WIRE ROPES
PureFlex

STEEL WIRE ROPES

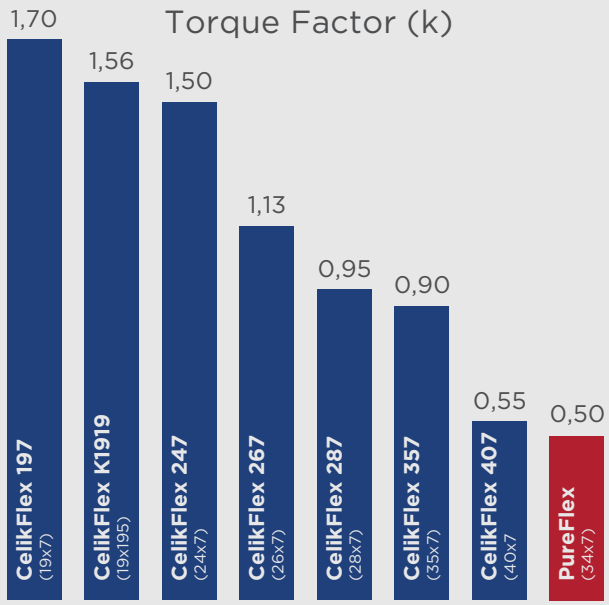
celikhalat.com.tr

Sustainable Smarter Solutions

Rotation Resistant Ropes (PureFlex):

PureFlex is a patented product of Çelik Halat. PureFlex, which has a (1 + 5 + 5 + 5 + 18) layer structure, provides ultra high rotation resistance and strength.

Wire ropes are exposed to rotation under load due to their helical structure. As a result of rotation, the rope is damaged and completes its service life. Rotational behavior, which creates a serious problem especially in high altitude.



Graph 1: Torque Factor Values of Semi-Rotation Resistant and Rotation Resistant Ropes

Çelik Halat has a cooperation agreement with the Technical University of Dresden on Laboratory and Testing Services. Within the scope of this agreement, tests were performed on rotation resistant steel wire ropes at Dresden Technical University. As a result of the Torque-Rotation Test performed on 19x7, 35x7, 40x7 and PureFlex ropes, PureFlex has been the best rotation resistance.

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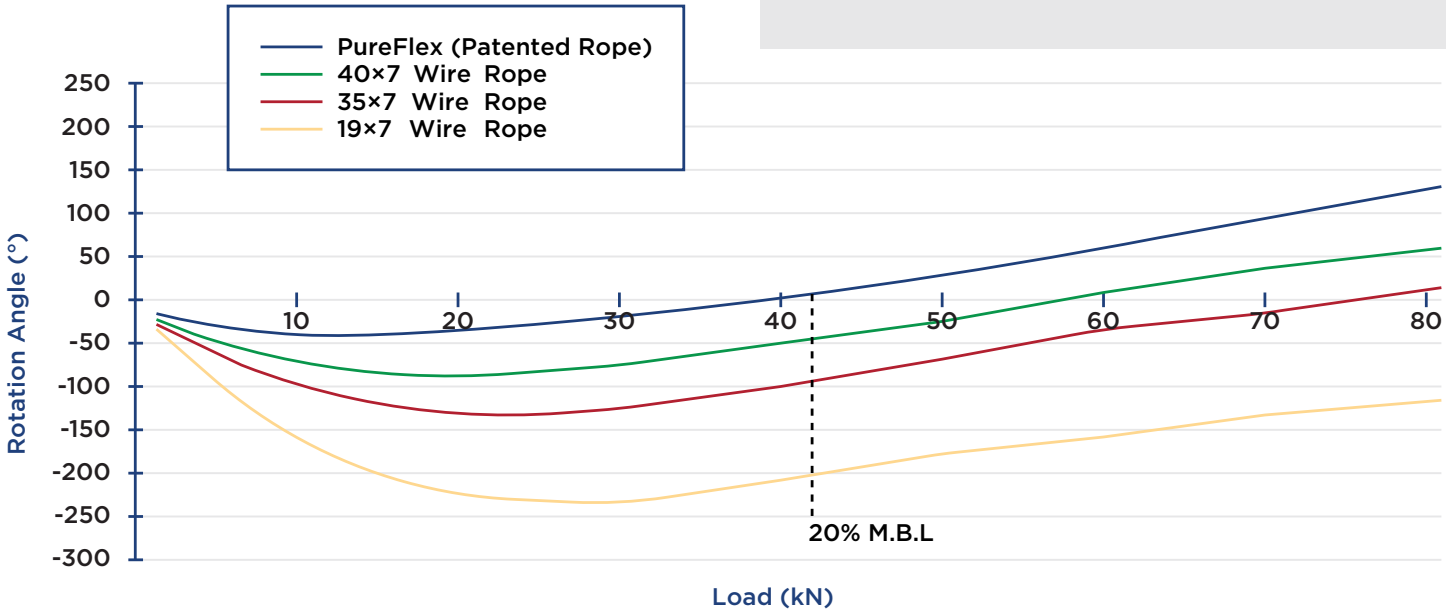


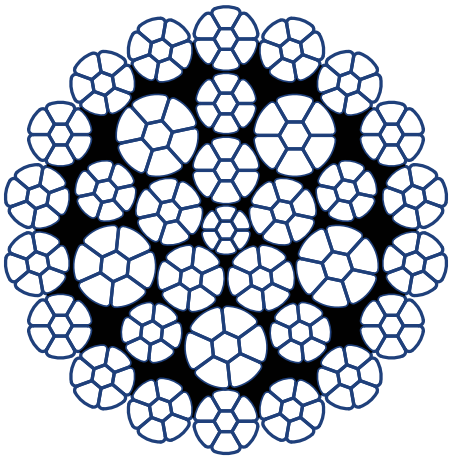
Graph 2: Torque-Rotation Test performed on 19x7, 35x7, 40x7 and PureFlex Ropes

Please contact our sales officials for detailed information.

PUREFLEX ROTATION RESISTANT ROPES

Very High Breaking Force

Swivel



Lubricate

Compacted

PureFlex [(1+6)+5(1+6)+5x(1+6)+18(1+6)]											
Rope Dia. (mm)	Unit Weight (kg/m)	Minimum Breaking Load (kN)				Rope Dia. (mm)	Unit Weight (kg/m)	Minimum Breaking Load (kN)			
		1570 [N/mm²]	1770 [N/mm²]	1960 [N/mm²]	2160 [N/mm²]			1570 [N/mm²]	1770 [N/mm²]	1960 [N/mm²]	2160 [N/mm²]
10	0,463	70,0	78,9	87,4	89,2	23	2,449	370	418	462	472
11	0,560	84,7	95,5	106	108	24	2,667	403	455	504	514
12	0,667	101	114	126	128	25	2,894	438	493	546	558
13	0,782	118	133	148	151	26	3,130	473	534	591	603
14	0,907	137	155	171	175	27	3,375	540	575	637	650
15	1,042	158	178	197	201	28	3,630	549	619	685	699
16	1,185	179	202	224	228	29	3,894	589	664	735	750
17	1,338	202	228	253	258	30	4,167	630	710	787	803
18	1,500	227	256	283	289	32	4,741	717	808	895	913
19	1,671	253	285	316	322	34	5,352	809	913	1011	1031
20	1,852	280	316	350	357	36	6,000	907	1023	1133	1156
21	2,042	309	348	386	393	38	6,686	1011	1140	1262	1288
22	2,241	339	382	423	432	40	7,408	1120	1263	1399	1427

FEATURES

- Extremely High Breaking Load
- Ultra High Rotation Resistance
- Excellent Compaction
- Regular or Lang Lay Rope

USAGE AREAS

- Overhead Crane
- Tower Crane
- Crawler Crane
- Harbour Crane
- Deck Cargo Crane
- Offshore Crane
- Mobile Crane

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