exar®

STEEL WIRE ROPES

CATALOGUE

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ABOUT US

THE EXAR COMPANY

2010 set up the EXAR Company.

2011 EXAR Company becomes one of the largest manufacturers and suppliers of slings and sling accessories in Poland.

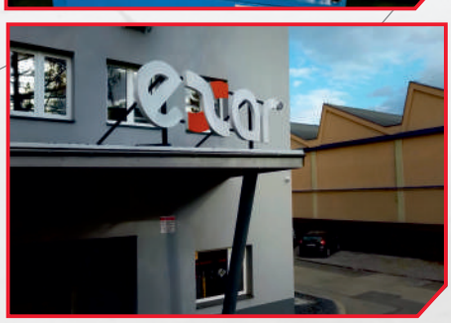
2021 entry into the European market of steel wire rope producers. Our first steel wire rope factory started production in Włocławek.

The highest quality steel wire ropes carefully checked and tested. Steel wire for the production obtained only from world leaders among wire producers.

production of steel wire ropes (1x7, 1x19, 6x19, 7x19, 6x7, 7x7).

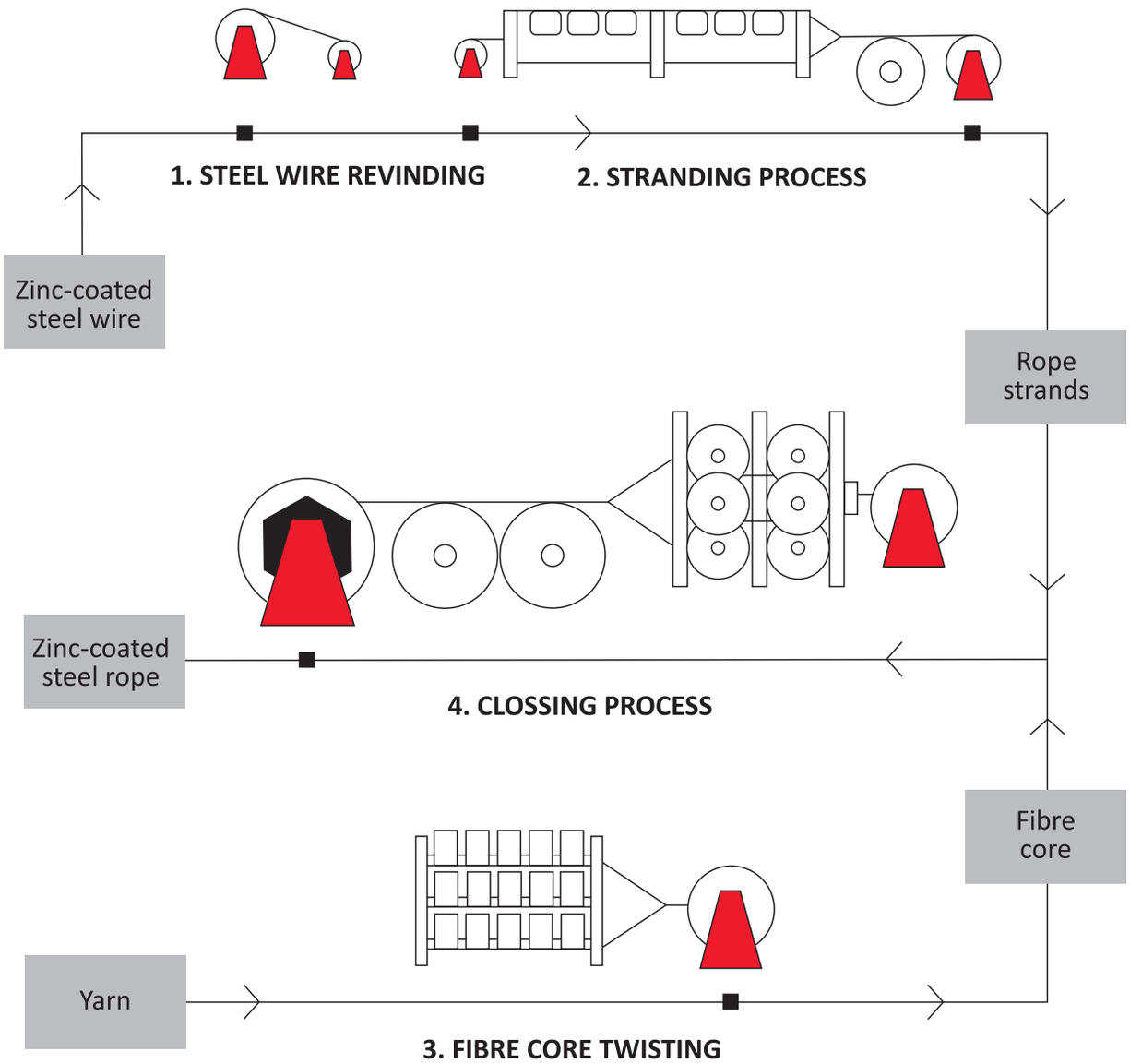
2022 further expansion of the devision in Włocławek. Production of steel wire ropes type WS 6x36.

2022 follow the global trends in the field of quality management. In progress of obtaining IATF 16949 and ISO 9001 certificates.



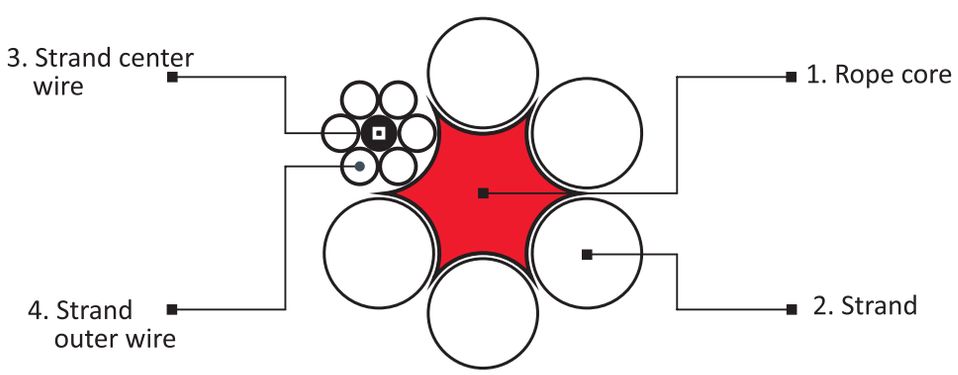
STEEL WIRE ROPES-INFORMATION

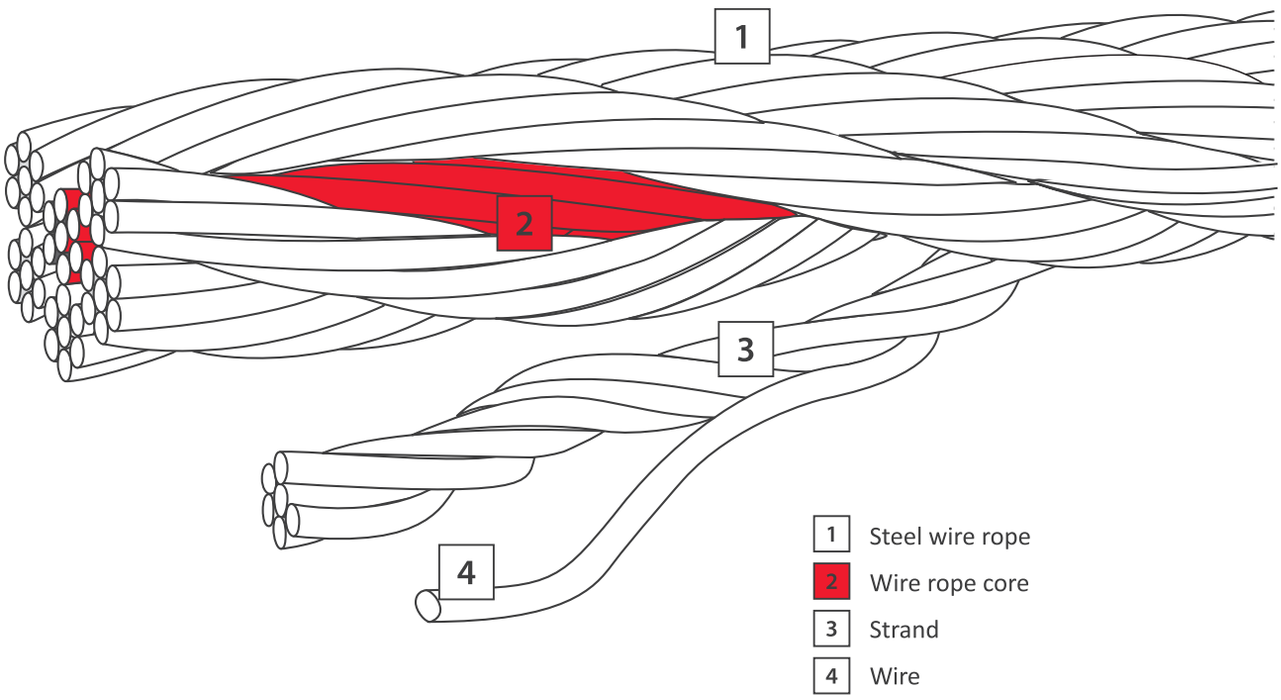
HOW ARE STEEL ROPES PRODUCED?



■ Inter-operational quality control points

STEEL ROPE CONSTRUCTION





Wire rope is a collection of steel strands that have been twisted and wound to form the shape of a helix with the purpose of supporting and lifting heavy loads and performing tasks that are too rigorous for standard wire.

An essential part of the design of wire rope is the required clearance between the strands to give each stand the freedom to move and adjust when the rope bends. It is this unique feature that differentiates wire rope from solid wire and other forms of cable.

The three basic components of wire rope are the wire, strand, and core, which are wound together to form the rope.

WIRE

The basic element of wire rope is wire that is used to configure, shape, and form the rope. Typically galvanized wires are the first choice.

Galvanized steel is coated with zinc as a protection against corrosion and is an affordable alternative to stainless steel.

WIRE STRANDS

The first step in wire rope creation is the production of wire strands where wires are wound around a single core wire. The number of wires included in the strand is dependent on the specified strength, flexibility, and size requirements of the rope. Once the strand is completed, it is straightened before being moved to wire rope construction.

CORE

The core of a wire rope runs through the center of the rope and can be composed of a variety of materials, which include synthetic fibers, natural fibers, a single strand, or another wire rope. The core supports the wound strands, helps maintain their position, is an effective lubricant carrier, and provides support.

STEEL WIRE ROPES - BASIC TERMINOLOGY

The Nominal Diameter of the rope

In standard practice, the nominal diameter is the minimum diameter of wire rope.

The actual diameter of the rope

The actual diameter of the rope is the value obtained by measuring the rope with measuring instruments.

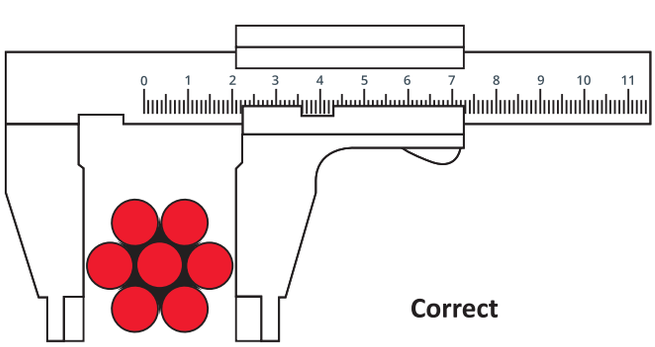
Diameter teolerance

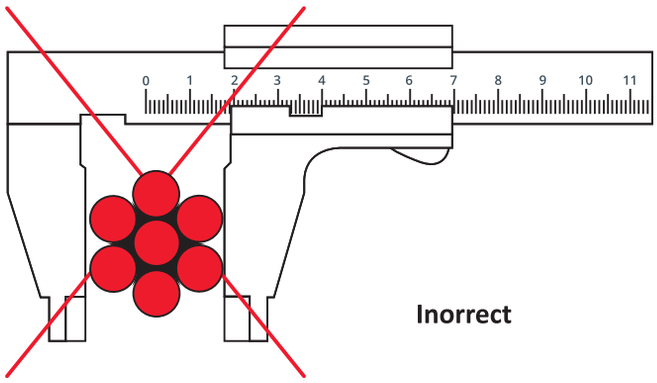
All tolerances are taken on the plus side. Wire rope is not termed oversize until its diameter exceeds the allowable maximum.

The diameter of wire rope is the diameter of the circle which encloses all of wires.

When mesuring wire rope, it is important to take greatest distance of the outer limits of the crowns of two opposite strands.

A measurment across the valleys will result in incorrect lower readings.





Minimum breaking force

The minimum breaking load describes the maximum force under straight pull a free length of rope can be exposed to until it breaks. It is specified in kN.

Grades of wire rope

Wire ropes are made of steel wires in different tensile strengths grades to meet various requirements according to the application.

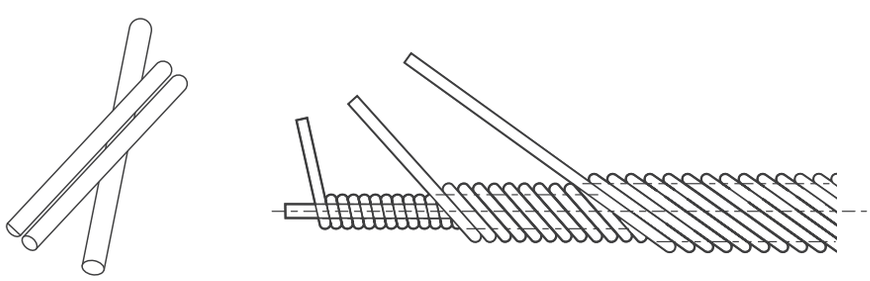
Lay length of wire rope

The length of a rope lay is the distance measured parallel to the center line of a wire rope in which a strand makes one complete spiral or turn around the rope. The length of a strand lay is the distance measured parallel to the center line of the strand in which one wire makes one complete spiral or turnaround the strand.

STRANDING TYPES

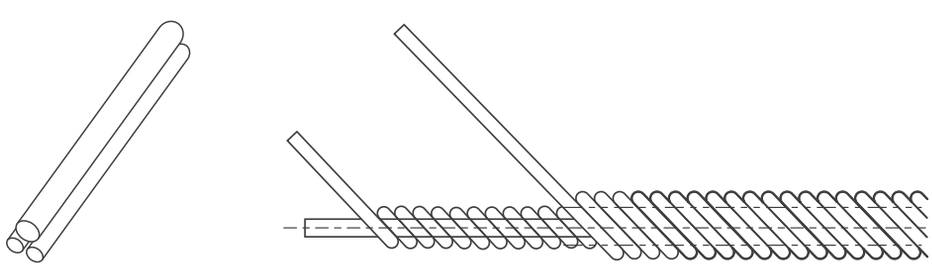
CROSS-LAY

Cross Laid Rope is manufactured to form a point of contact between strands wound at different pitch.
This type construction allows for a more flexible final product.



PARALLEL LAY

Parallel-laid strands consists of at least two wire layers that are all laid in one operation in the same direction.
The lengths of lay of all wire layers are the same, resulting in linear contact of wires.



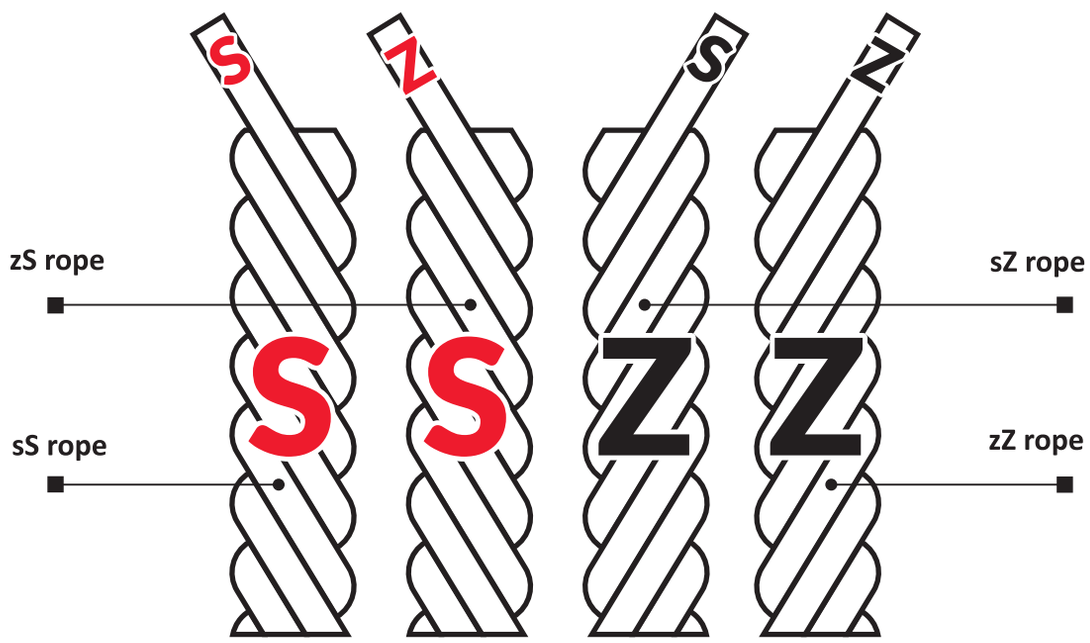
TYPE OF LAY AND DIRECTION OF LAY

Right Lay (Z-lay)
The rope closing direction is clockwise.

Left Lay (S-lay)
The rope closing direction is counter clockwise.

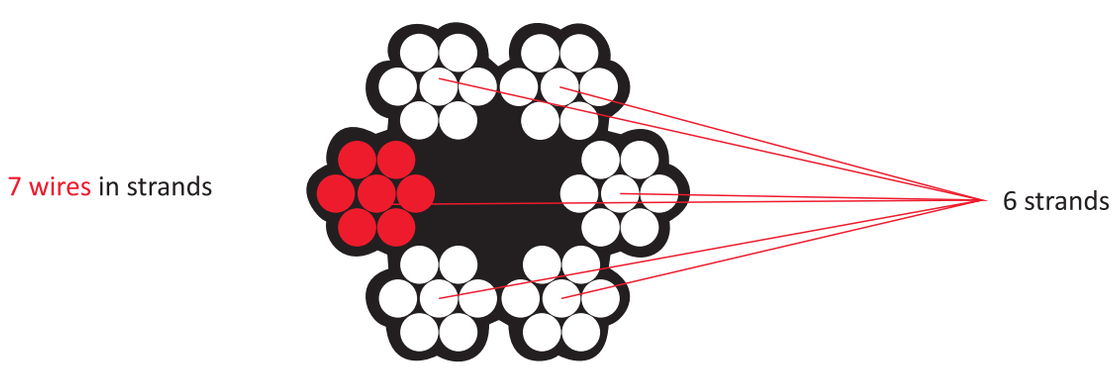
Regural Lay (sZ-lay and zS-lay)
Wires in strands are laid in the opposite direction of the strand and are paralel to the rope axis.

Lang Lay (sS-lay and zZ-lay)
Wires in the strands are laid in the same direction as strands and are in an angle to the rope axis.



WIRE ROPE CLASSIFICATION

A wire rope's classification includes two numbers. The first number represents number of strands in the rope. he second number represents the number of wires in each strand.



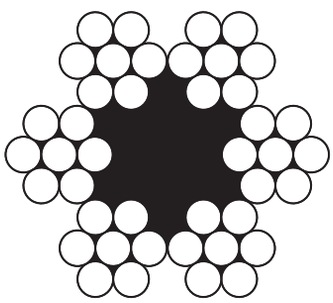
wire rope 6 x 7

WIRE ROPE CORES

The core of a wire rope runs through the center of the rope and can be composed of a variety of materials, which include synthetic fibers, natural fibers, a single strand, or another wire rope. The core supports the wound strands, helps maintain their position, is an effective lubricant carrier, and provides support.

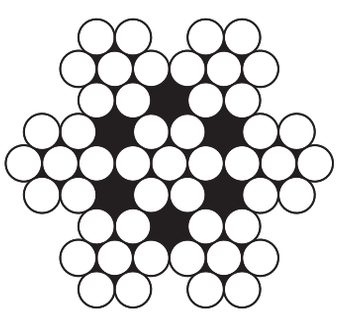
Fiber - SFC

Wire ropes with fiber cores are restricted to lighter loads and are not used in severe, harsh, or stressful conditions. Polypropylene is type of synthetic fiber cores and can be used in conditions where there is exposure to chemicals.



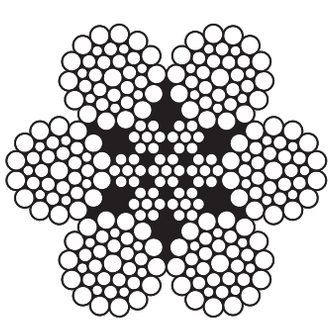
Strand - IWS

A strand, or wire strand core, is exactly like the rest of the strands of the wire rope with wires of the same diameter and size as the other strands.



Wire rope core – IWRC

The rope with a wire rope core is actually a wire rope with another wire rope serving as the core. These types of wire ropes are used where the rope will be exposed to exceptional resistance and crushing.



METHOD OF MARKING STEEL ROPES ACCORDING TO EN 12385-2:

STEEL WIRE ROPE **6** **6x19** **SFC** **1960** **B** **sZ**

- Nominal rope diameter
- Rope construction
- Type of core
- Rope strength of wires
- Wire coating
- Lay direction

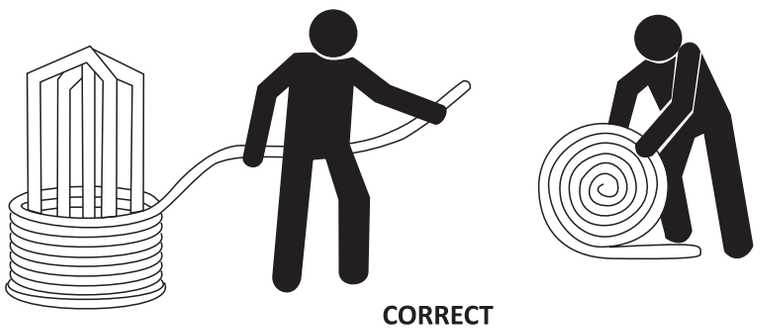
ZINC WEIGHT ON GALVANIZED WIRE: EN 10244-2

Galvanized steel has a zinc coating for corrosion resistance and has the same strength and durability as bright steel.

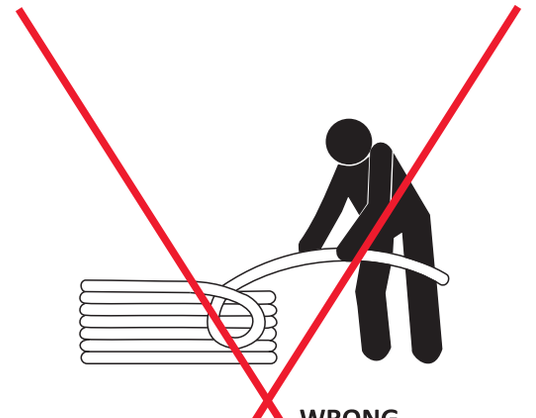
Wire diameter (mm)	A g/m²	B g/m²
0,15≤d<0,20	-	15
0,20≤d<0,25	30	20
0,25≤d<0,32	45	30
0,32≤d<0,40	60	30
0,40≤d<0,50	85	40
0,50≤d<0,60	100	50
0,60≤d<0,70	115	60
0,70≤d<0,80	130	60
0,80≤d<0,90	145	70
0,90≤d<1,00	155	70
1,00≤d<1,20	165	80
1,20≤d<1,40	180	90

WAYS OF ROPE UNWINDING

From the coil

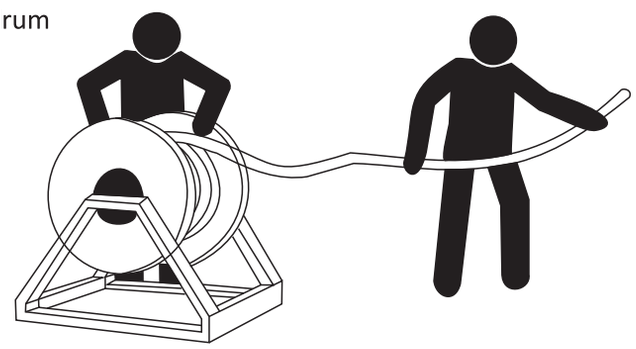


CORRECT

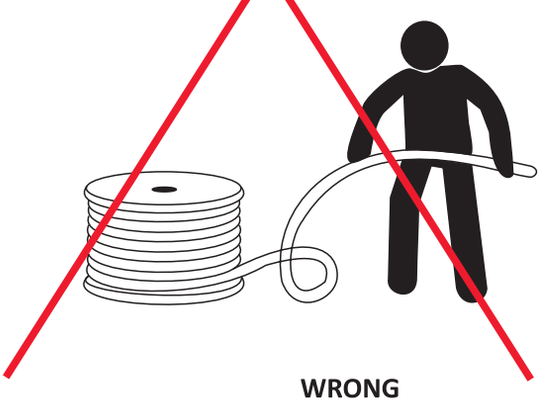


WRONG

From the drum



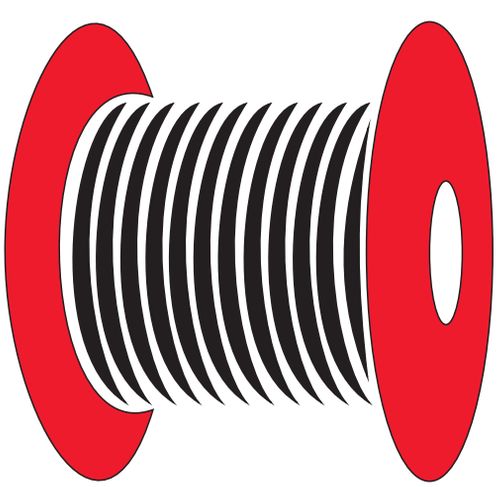
CORRECT

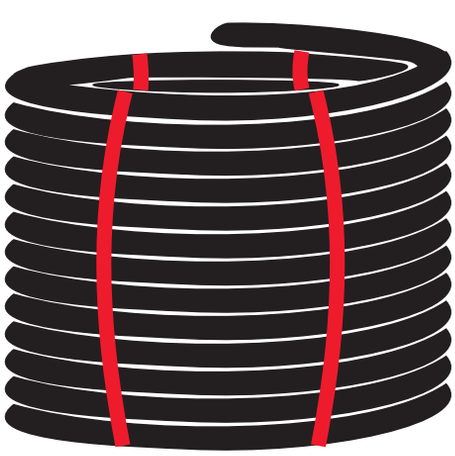


WRONG

STEEL WIRE ROPE PACKING

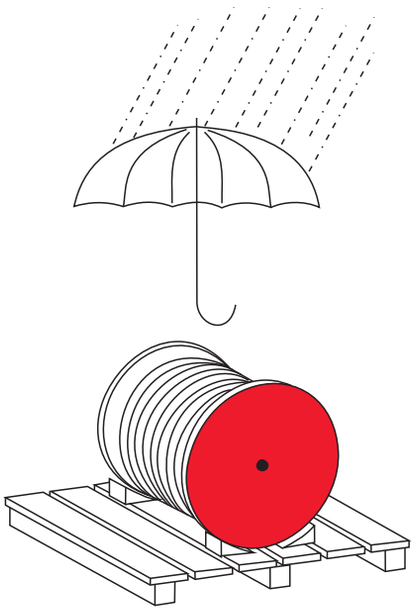
Wire rope is generally delivered on plywood or wooden and in form of coil.





STEEL WIRE ROPE STORAGE

Steel wire ropes must be stored in a dry well ventilated shed.

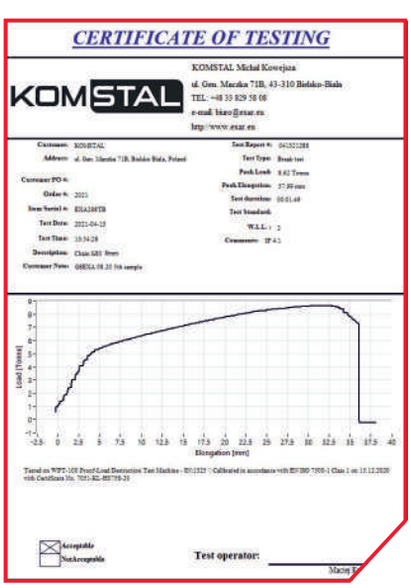


STEEL WIRE ROPE TESTING

To meet the requirements of the standard, the wire rope must be properly tested.

The main features of the rope that we focus on during the tests in our laboratory are:

- zinc weight on galvanized wire,
- actual diameter,
- actual breaking load,
- ley length,
- rope preformation.

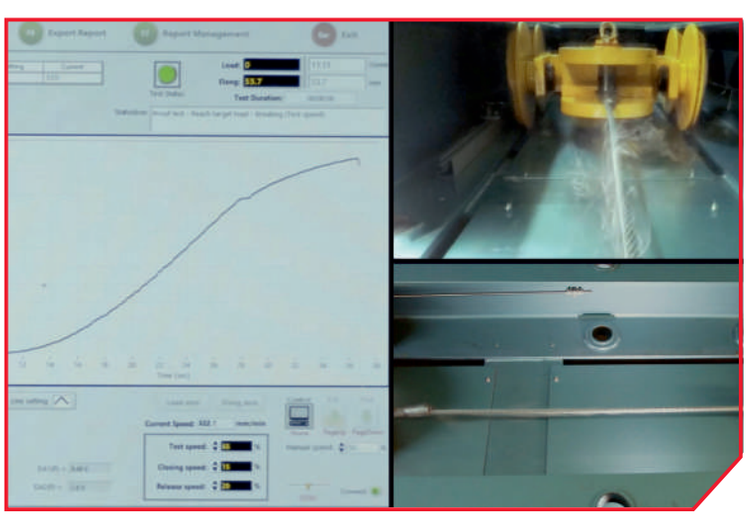


CERTIFICATE OF TESTING

KOMSTAL

KOMSTAL Michał Kowejsza
ul. Gen. Maczka 71B, 43-310 Bielsko-Biała
TEL: +48 33 829 58 08
e-mail: biuro@exar.eu
http://www.exar.eu

Test operator:



USES OF STEEL WIRE ROPES

Wire rope is widely used in machines, structures, and varied lifting applications. Its type, size, and requirements are determined by how it will be used. Regardless of its use, wire rope guarantees exceptional strength and provides high quality and excellent performance.

The lifting of heavy loads for centuries involved the use of hemp rope or chains, neither of which was a guaranteed or substantial method. Early in the 19th Century, between 1824 and 1838, Wilhelm Albert, a German mining engineer, combined the twisting of hemp and strength of chains to create today's wire rope.

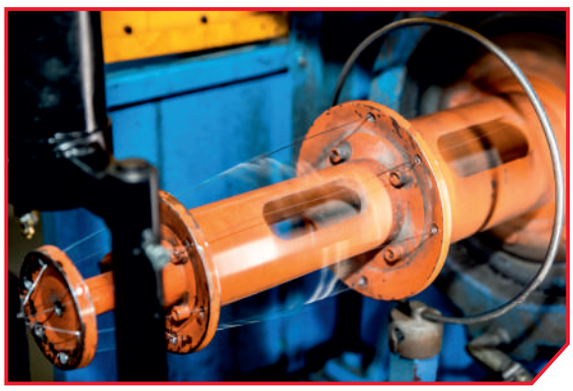
Since its beginnings, wire rope has undergone fantastic changes leading to the many varieties found in industry today.

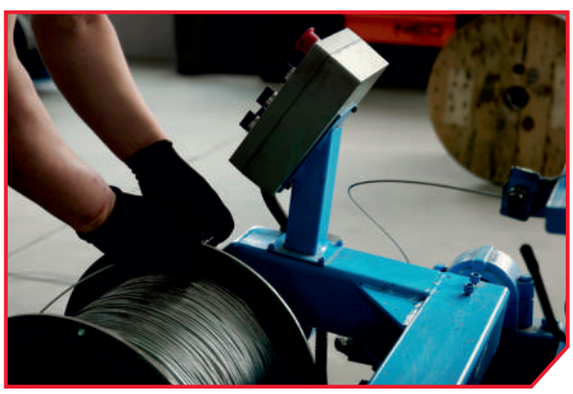
The most common use of wire rope is as a part of a crane hoist wherein it is attached to the hook of the hoist and wrapped around a grooved drum. The tensile strength and durability of wire rope makes an ideal tool for lifting and keeping loads secure.

In addition to its many lifting applications, the strength and stability of wire rope is useful in other applications, especially in the aerospace industry. Pedals, levers, and connectors in the cockpit of an aircraft are connected with wire rope. The wires provide for the passage of power between systems and mechanisms; this allows control of the aircraft.

All automotive production environments make use of wire ropes for supplying materials, moving heaving loads, and positioning equipment. Wire rope can be found in the production of steering wheels, cables, exhausts, springs, sunroofs, doors, and seating components.

The major use for wire ropes in agriculture and greenhouse industries is as a means for fasteners and tensioners is ideal for high load anchoring and structural bracing. They are also used as hanging of irrigation and growing systems.

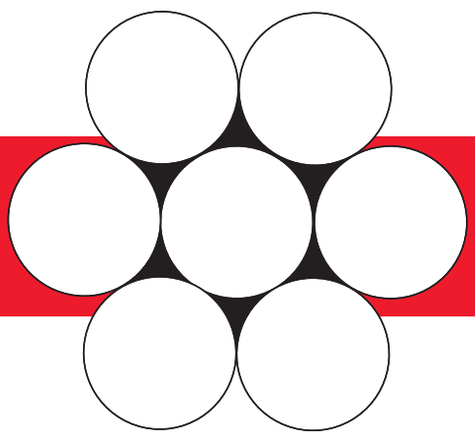




STEEL WIRE ROPES

GALVANIZED STEEL WIRE STRAND 1x7

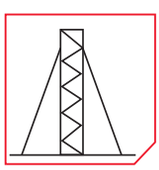
KOMSTAL | STEEL | CONSTRUCTION 1x7 | Zn | 200°C ↕ -40°C | LOW FLEXIBILITY | VERY HIGH STRENGHT

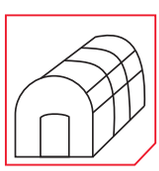


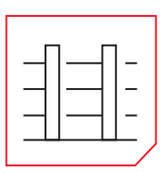
1x7 ● ∅ **1,0-4,0 mm**

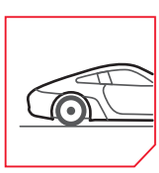
- galvanized steel wire strand,
- 1x7 single-layer weave; 1 wire with 7 wires wound around,
- very stiff, not very elastic but highly extensible,
- tensile strength 1960 N/mm²,
- straight line applications.

FIELDS OF APPLICATION


Stay rope

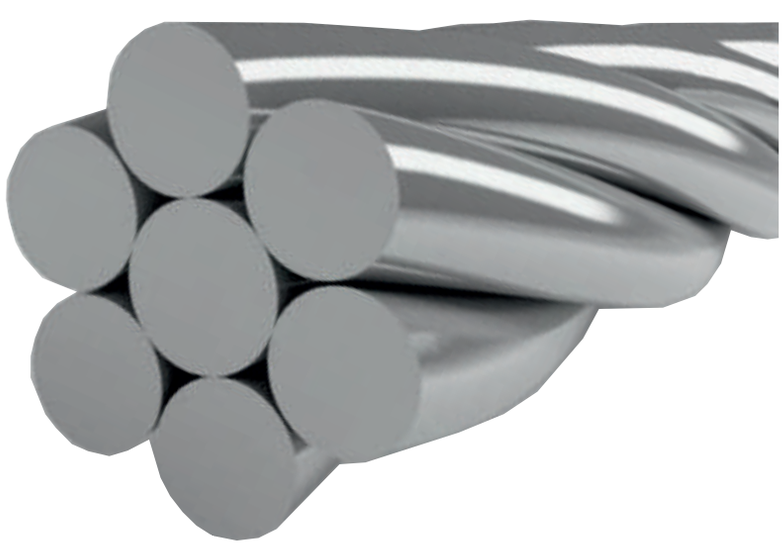

Greenhouses


Agriculture


Automotive industry

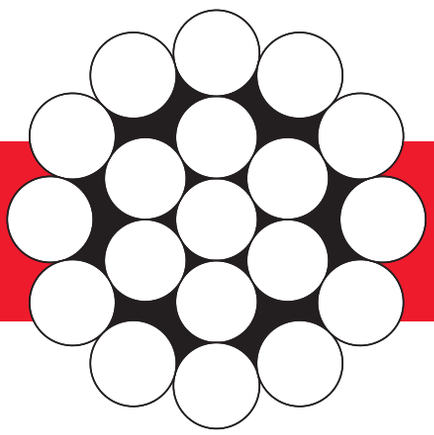

Boats

Wire strand 1x7 Tensile strength 1960 (N/mm²)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
1,0	0,0049	1,04
1,5	0,0110	2,34
2,0	0,0196	4,16
2,5	0,0306	6,49
3,0	0,0440	9,35
4,0	0,0782	16,60



GALVANIZED STEEL WIRE STRAND 1x19

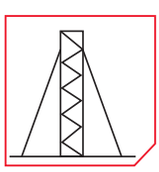
KOMSTAL | STEEL | CONSTRUCTION 1x19 | Zn | 200°C ↕ -40°C | LOW FLEXIBILITY | HIGH STRENGHT

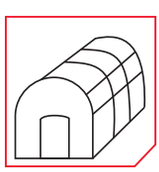


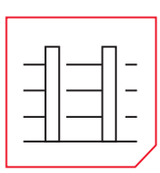
1x19 ● ∅ 1,0-4,0 mm

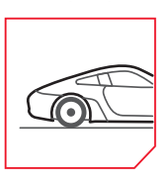
- galvanized steel wire rope,
- 1x19 double - layer strand, 1 centre with 6+12 wires wound around,
- stiff, not very elastic but highly extensible,
- tensile strength 1960 N/mm^2,
- wire strand for rigging, stays and controls.

FIELDS OF APPLICATION


Stay rope

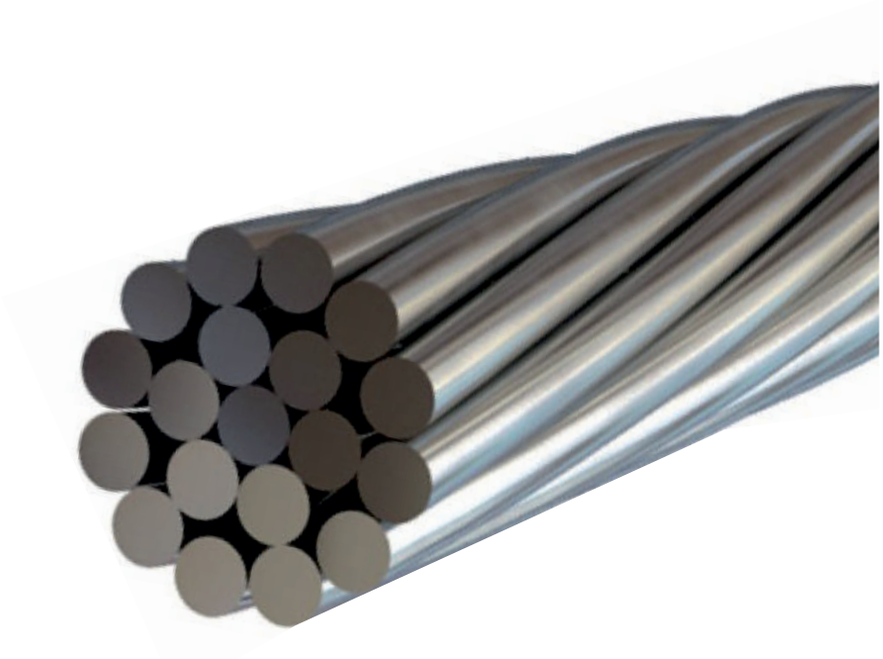

Greenhouses


Agriculture


Automotive industry

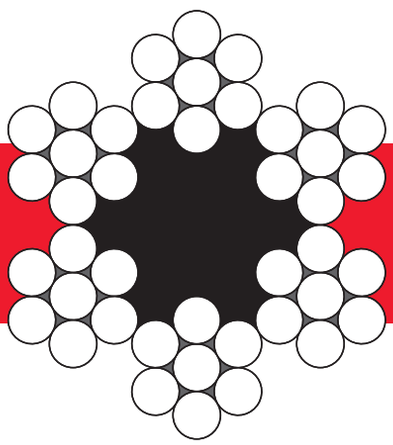

Boats

Wire strand 1x19 Tensile strength 1960 (N/mm^2)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
1,0	0,0049	1,03
1,5	0,0109	2,32
2,0	0,0194	4,12
2,5	0,0303	6,44
3,0	0,0437	9,28
4,0	0,0776	16,50



GALVANIZED STEEL WIRE ROPE 6x7 FC

KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 6x7 | CORE FC | Zn | 200°C ↕ -40°C | LOW FLEXIBILITY | HIGH STRENGHT



6x7 ● ∅ 4-8 mm

- galvanized steel wire rope, made in accordance with the standard 12385-4,
- single layer weave 6x7, 6 - number of strands, 7 - number of individual wires in the weave,
- fiber core,
- tensile strength 1960 N/mm^2,
- used for general purposes like hanging, small stays and in agriculture. It's most used in small diameters up to 8mm.

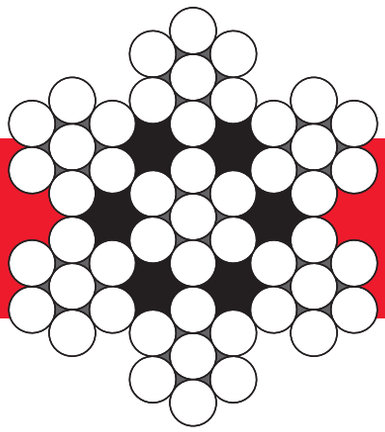
FIELDS OF APPLICATION

Construction | Agriculture | Greenhouses | Automotive industry | Engineering applications

Wire rope 6x7 Tensile strength 1960 (N/mm^2)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
4,0	0,0552	10,40
5,0	0,0863	16,30
6,0	0,1240	23,40
8,0	0,2210	41,60

GALVANIZED STEEL WIRE ROPE 7x7 WSC

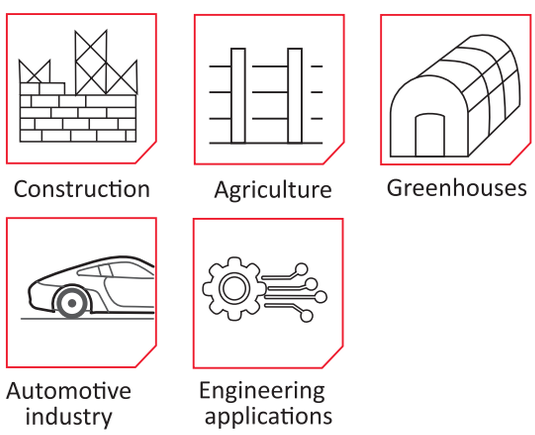
KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 7x7 | CORE WSC | Zn | 200°C ↕ -40°C | MEDIUM FLEXIBILITY | MEDIUM STRENGHT



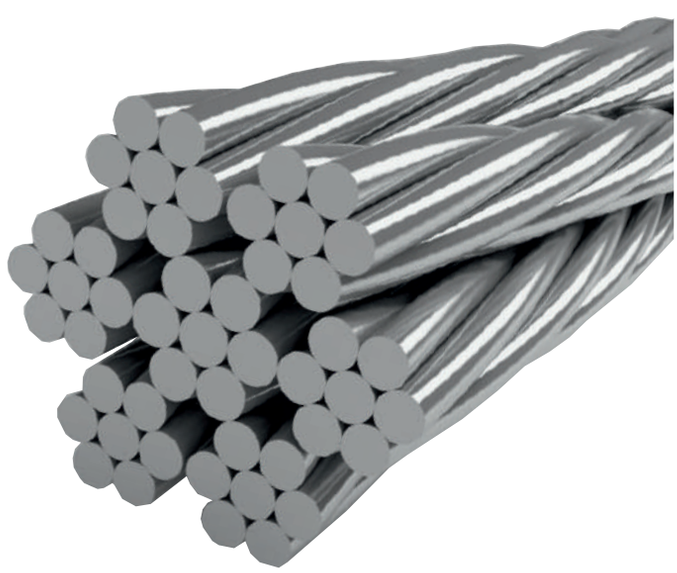
7x7 ● ∅ 4-8 mm

- galvanized steel rope, made in accordance with the standard 12385-4,
- single layer weave 7x7, 7 - number of strands, 7 - number of individual wires in the weave,
- with a steel core in the form of strands WSC - the same construction as the rope strands,
- medium strength and flexibility,
- tensile strength 1960 N/mm²,
- used for general purposes like hanging, small stays and in agriculture. It's most used in small diameters up to 8mm.

FIELDS OF APPLICATION

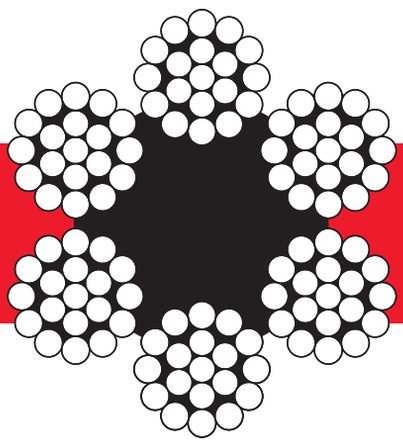


Wire rope 7x7 Tensile strength 1960 (N/mm²)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
4,0	0,0614	11,30
5,0	0,0960	17,60
6,0	0,1380	25,30
8,0	0,2460	45,00



GALVANIZED STEEL WIRE ROPE 6x19 FC

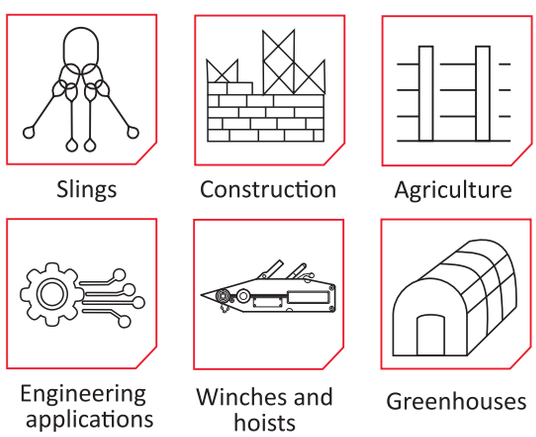
KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 6x19 | CORE FC | Zn | 200°C ↕ -40°C | HIGH FLEXIBILITY | HIGH STRENGHT



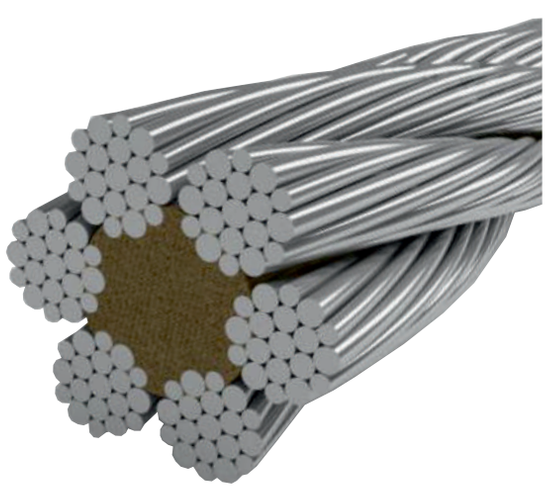
6x19 ● ∅ 4-12 mm

- galvanized steel rope, made in accordance with the standard 12385-4,
- three-layer weave 6x19+FC, in each strand 19 wires of the same diameter, in three layers (1+6+12); FC (eng. fibre core) - fiber core, which makes the rope more flexible,
- standard construction (all the wires have the same diameter).
- fiber core,
- tensile strength 1960 N/mm^2,
- high elasticity and high load capacity,
- used for general purposes like slings production, gives a good strength and a reasonable balance between fatigue and wear resistance.

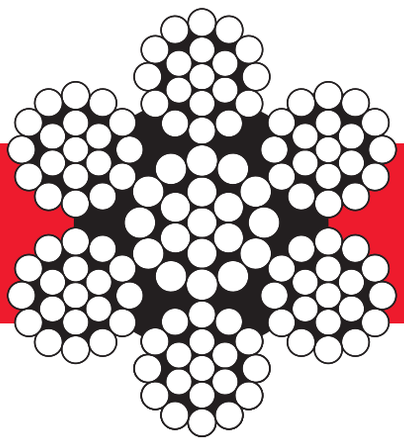
FIELDS OF APPLICATION



Wire rope 6x19+FC Tensile strength 1960 (N/mm^2)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
4,0	0,0554	9,63
5,0	0,0865	15,00
6,0	0,1250	21,70
8,0	0,2210	38,50
10,0	0,3460	60,20
12,0	0,4980	86,60



GALVANIZED STEEL WIRE ROPE 7x19

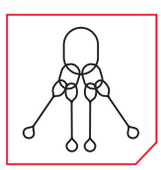


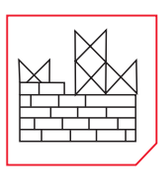
KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 7x19 | CORE WSC | Zn | 200°C ↕ -40°C | NOT TO FLEXIBILE | HIGH STRENGHT

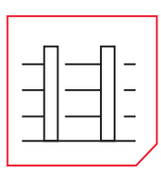
7x19 ● ∅ 4-12 mm

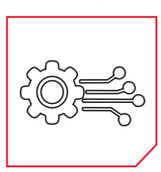
- galvanized steel rope, made in accordance with the standard 12385-4,
- three-layer weave 7x19 (6x19+WSC), in each strand 19 wires of the same diameter, in three layers (1+6+12); WSC - wire stran dcore,
- standard construction (all the wires have the same diameter).
- WSC core,
- tensile strength 1960 N/mm^2,
- not to elastic and high load capacity,
- used for general purposes like slings production, gives a good strength and a reasonable balance between fatigue and wear resistance.

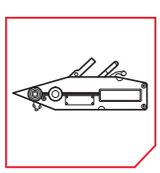
FIELDS OF APPLICATION

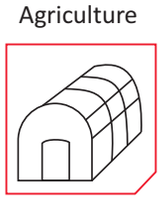

Slings


Construction

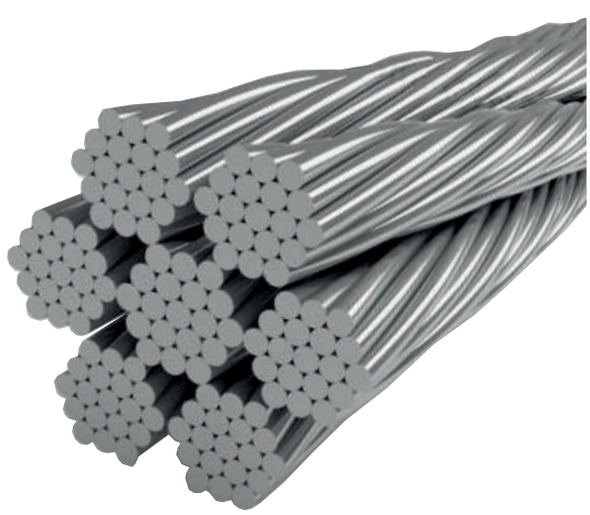

Agriculture


Engineering applications


Winches and hoists

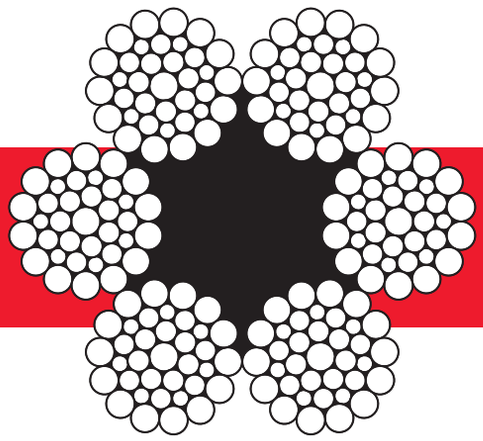

Greenhouses

Wire rope 7x19 Tensile strength 1960 (N/mm^2)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
4,0	0,0610	11,40
5,0	0,0953	17,70
6,0	0,1370	25,50
8,0	0,2440	45,40
10,0	0,3810	71,00
12,0	0,5490	102,00



GALVANIZED STEEL WIRE ROPE WS6x36 FC

KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 6x36 | CORE FC | Zn | 200°C ↕ -40°C | HIGH FLEXIBILITY | HIGH STRENGHT

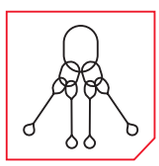


WS6x36 ● ⌀ 8-12 mm

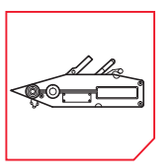
COMING SOON

- galvanized steel rope, made in accordance with the standard 12385-4,
- the strand has three wire layers produced in one operation and it consists of combined Warrington and Seale type strands, arrangement of wires in the strand: 1-7-7+7-14),
- optimal combination of high flexibility and abrasion resistance,
- fiber core,
- tensile strength 1960 N/mm²,
- the most popular and most commonly used rope construction,
- used for general purposes like slings production, lifting applications.

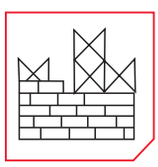
FIELDS OF APPLICATION



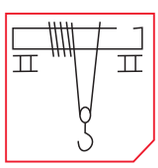
Slings



Winches and hoists

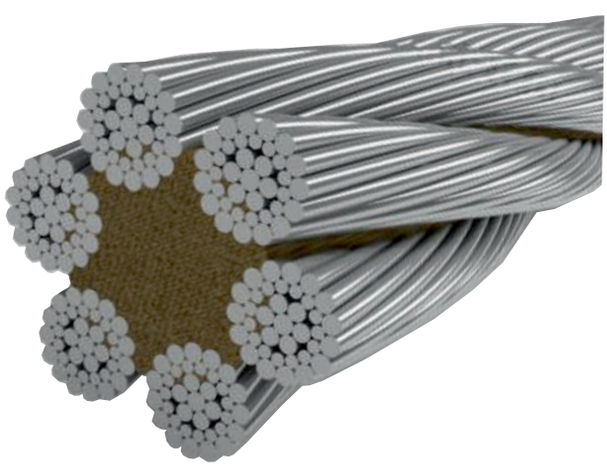


Construction



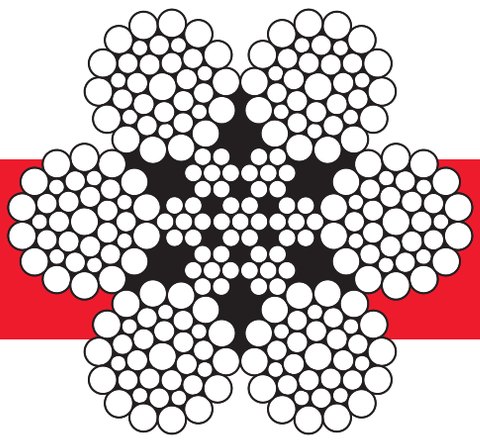
Overhead cranes

Wire rope WS6x36+FC Tensile strength 1960 (N/mm²)		
Diameter (mm)	**Weight (kg/m)**	**Minimum breaking load (kN)**
8,0	0,235	41,40
10,0	0,367	64,70
12,0	0,528	93,10



GALVANIZED STEEL WIRE ROPE WS6x36 IWRC

KOMSTAL | PN-EN 12385-4 | STEEL | CONSTRUCTION 6x36 | CORE IWRC | Zn | 200°C ↕ -40°C | HIGH FLEXIBILITY | HIGH STRENGHT



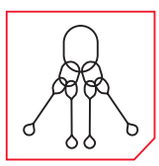
Ws6x36 IWRC ●

∅ 8-12 mm

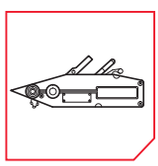
COMING SOON

- galvanized steel rope, made in accordance with the standard 12385-4,
- the strand has three wire layers produced in one operation and it consists of combined Warrington and Seale type strands, arrangement of wires in the strand: 1-7-7+7-14),
- optimal combination of high flexibility and abrasion resistance,
- steel core IWRC,
- tensile strength 1960 N/mm²
- used for general purposes like slings production, lifting applications.

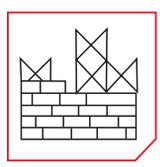
FIELDS OF APPLICATION



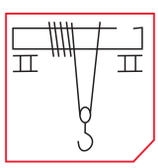
Slings



Winches and hoists

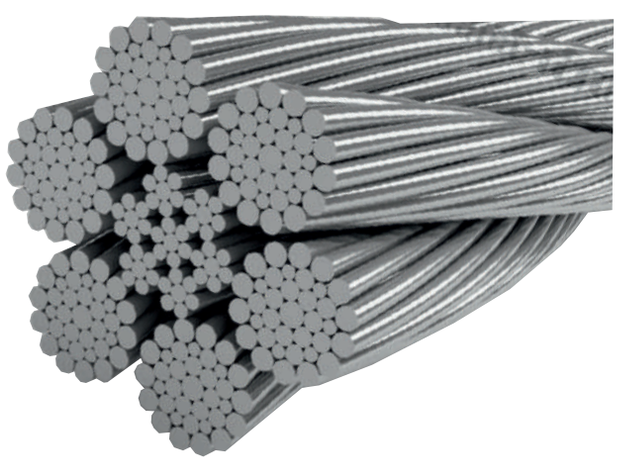


Construction



Overhead cranes

Wire rope WS6x36+IWRC Tensile strength 1960 (N/mm²)		
Diameter (mm)	Weight (kg/m)	Minimum breaking load (kN)
8,0	0,262	44,70
10,0	0,409	69,80
12,0	0,589	100,00



STEEL WIRE ROPE ASSEMBLIES

We specialize in production of wire rope assemblies for industries such as automotive and agriculture.







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