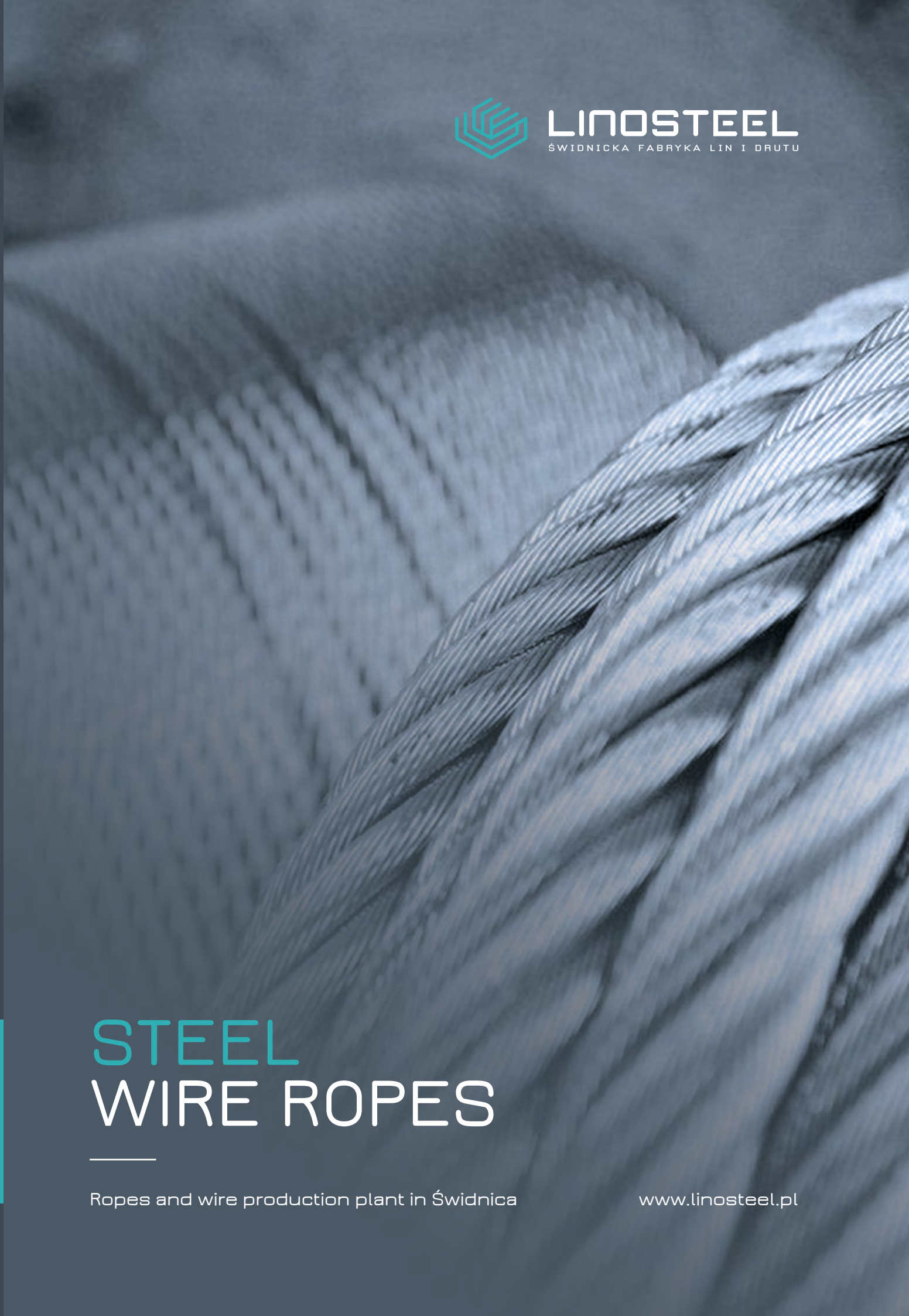


LINOSTEEL
ŚWIDNICKA FABRYKA LIN I DRUTU

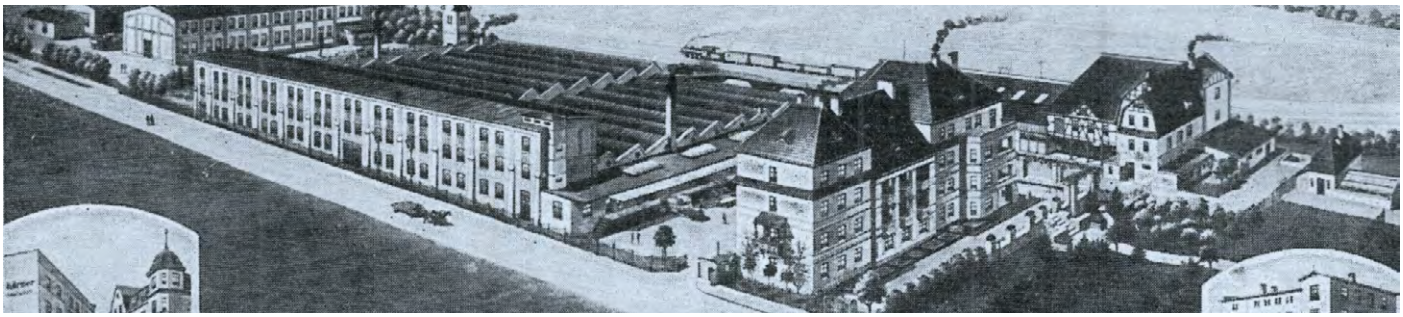
STEEL WIRE ROPES

Ropes and wire production plant in Świdnica

www.linosteel.pl

History of the plant

Świdnicka Fabryka Lin i Drutu „Linosteel" Sp. z o.o. is one of the leading producers of steel ropes in Poland. It was established in February 2018. but its history dates back to the 19th century. The factory was started in 1822 by Anton Korner, a German businessman. At that time, its seat was located at Pankiewicza street, as it is presently named, in Wałbrzych (formerly in Waldenburg) and the subject of its activity was production of sieves and wire ware. As a result of growing request for steel ropes from the coal mines of the Wałbrzych-Nowa Ruda Mining Filed, the Wałbrzych Glass Works and the nearby mills, in the 70's of the 19th century the machines stock of the factory was thoroughly modernized , and in the 90's of the 19th century it was moved to new facilities at the crossroads of present Wrocławska and Długa streets. Up to the 20's of the 20th century, the factory had been subjected to regular redevelopment and, finally, it looked as in the photo below. It employed staff of approximately 300 people.

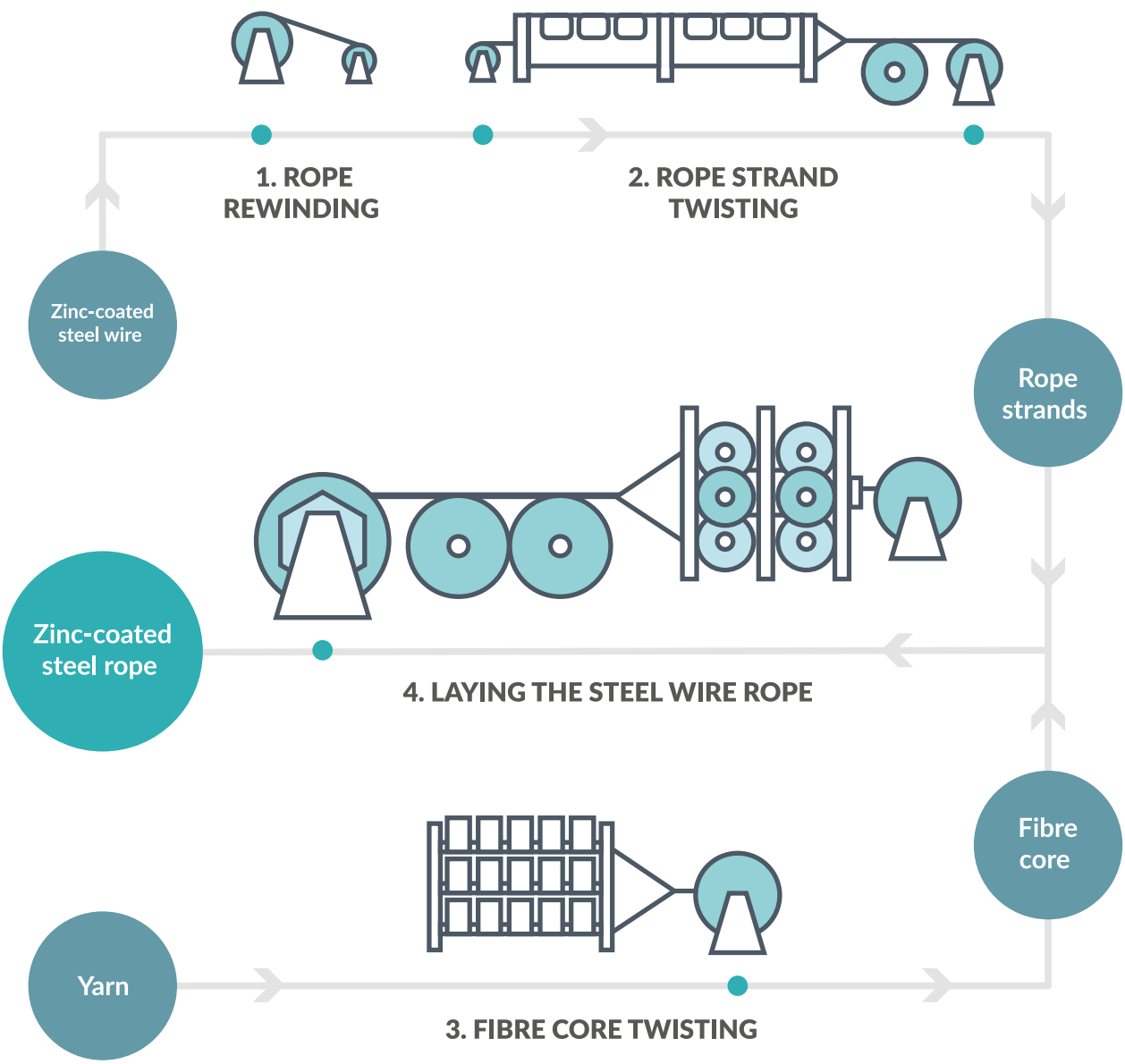


In 1945. as a result of nationalization and integration of the properties overtaken by Polish State, the factory had become a state-owned company and was given the name Przedsiębiorstwo Państwowe Dolnośląska Fabryka Lin i Siatek (State Company – Lower Silesian Factory of Ropes and Nets) In the 60's, the plant was attached to State Company Silesian Plant of Ropes and Wires„LINODRUT" in Zabrze, as Plant No. 4. and in 1993 it was converted into Dolnośląska Fabryka Lin i Drutu „Linodrut – Linmet" Sp. z o.o. w Wałbrzychu (Lower Silesian Factory of Ropes and Wire „Linodrut – Linmet" Ltd.), where 100% of the shares were taken by Śląskie Zakłady Lin i Drutów „LINODRUT" S.A.

In 2004 the plant was sold to a private company. Over the period 2004 – 2015. it underwent development and modernisation. In 2006 the objects in Wałbrzych were expanded, and in 2010 the production was moved to Świdnica to Inżynierska Street 8. obtaining in this way 300% more of the production, warehouse, office and storage space. In years 2010 – 2015. a purchase of new machines and devices was made, increasing the range of the produced diameters of steel ropes and the production capacity of the plant. Presently, the plant is situated in Świdnica at Inżynierskia Street 8. It has a very good location, in an industrial district of Świdnica city, it is 300 m from state road DK 35 Wałbrzych – Wrocław and approx. 3.5 km (5 min. of driving) from the Świdnica bypass leading to motorway A4.

The plant has an area of 2.5 ha for disposition. The buildings make up for 12728 m2 of usable area. There are additional halls being designed ofo the total area of 2400 m2. The owners of Świdnickia Fabryka Lin i Drutu „Linosteel" Sp. z o.o. intend to increase its production potential.

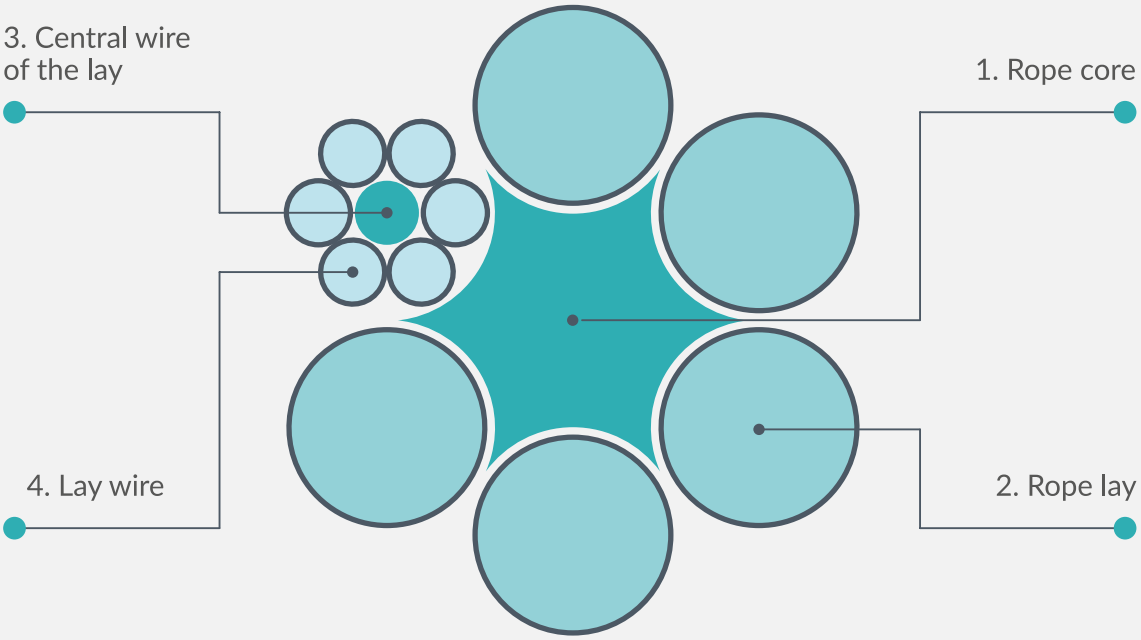
Description of the plant production process



● Inter-operational quality control points

Construction of a steel rope

A steel wire rope is a load-bearing element of a complex construction. Its primary elements are:
> wires > lays > cores > lubricant



Depending on the rope construction, the number of wires varies from a few to several-hundreds. The core of the rope constitutes a support for the strands, secures the rope against transverse deformations and is responsible for its proper shape. It is also a dispenser of the lubricant, which is released during rope operation, protecting in this way the wires and strands against internal corrosion. Fibre – NFC (organic) cores are made of the following plant fibres: **> canopy > cotton > sisal > jute**

We make synthetic-fibre – SFC cores of propylene. Steel cores are most often made in form of a rope construction 7x7. and less frequently in form of strand of the same construction as the rope lay, and sporadically in a form of rope with a different construction than the lay. Steel cores, in comparison to textile fibre cores provide a greater resistance to side thrusts, resistance to temperature, greater breaking force, with increased rigidity of the rope.

Terminology related to steel wire ropes

Nominal diameter – [d] mm

A diameter of the rope accepted in the standard applicable for the given rope construction, calculated as a theoretical mean value rounded to nearest integer. This value is used for specification and description of the ropes while making a request for proposal, issuing attests and calculating the strength of the ropes.

Rope real diameter [mm]

A value obtained as a result of rope measurement with a measuring instrument designed for this purpose (a caliper or micrometer). The rope measurement is done by measuring its diameter in two planes perpendicular to each other, two measurements for each of them. Obtained in this way results are averaged and the obtained result is the real diameter.

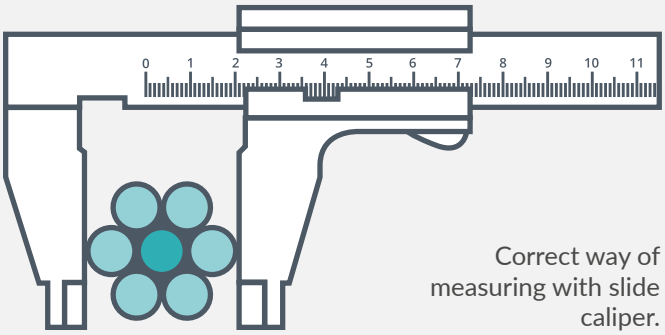
In dubious cases it is allowed to make a measurement of the rope loaded.

Diameter tolerance

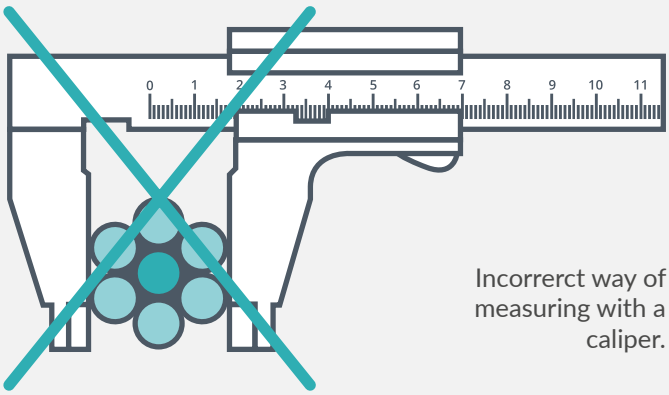
The allowable deviation from the nominal diameter of a rope, or, in other words: allowable measurement range of the rope real diameter measured without load.

Minimum braking force [kN]

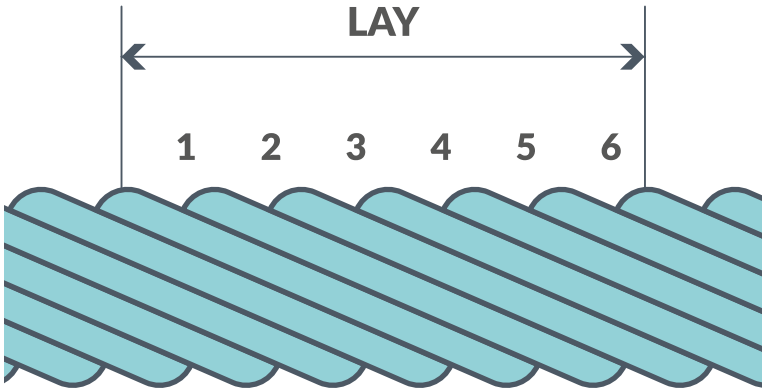
A value equivalent to the guaranteed breaking force, required by individual standard specifications to be strictly met by a ropes producer. The real force breaking the rope must not be lower than the minimum breaking force provided in the standard.



Correct way of measuring with slide caliper.



Incorrerct way of measuring with a caliper.



Rope strength classes [MPa]

The level of the required strength for which the value of rope breaking force is determined, denominated with values 1370. 1570. 1770. 1960. 2160 etc. The strength class corresponds with the strength of the Rm wires per rope, which is expressed by the ratio of breaking force to its cross-section area. Rope strength classification does not have to respond exactly to the strength of wires per rope.

Nominal mass of 1 m of a rope [kg]

Mass of 1 m of a rope is determined for the standard specification as a result of theoretical calculations.

Real mass of 1 m of a rope [kg]

A mass obtained from the measurement.

Length of wires lay in a strand (and strands in a rope)

It is a distance of which the same wire (strand) repeats while winding around the core wire.

Wire direction in the lay and lays in the rope

The first small letters z, s mean the direction of lays in the rope. The direction of wires in the strands – left, right – is respectively designated with characters Z and S following the character describing the direction of lays in the rope.

The co-related directions arrangement in the strands and the rope is designated as follows:

1) Left lang (LL)

The direction of wires in the lay and lays in the rope is left, the arrangement is designated **sS**

2) Right lang (RL)

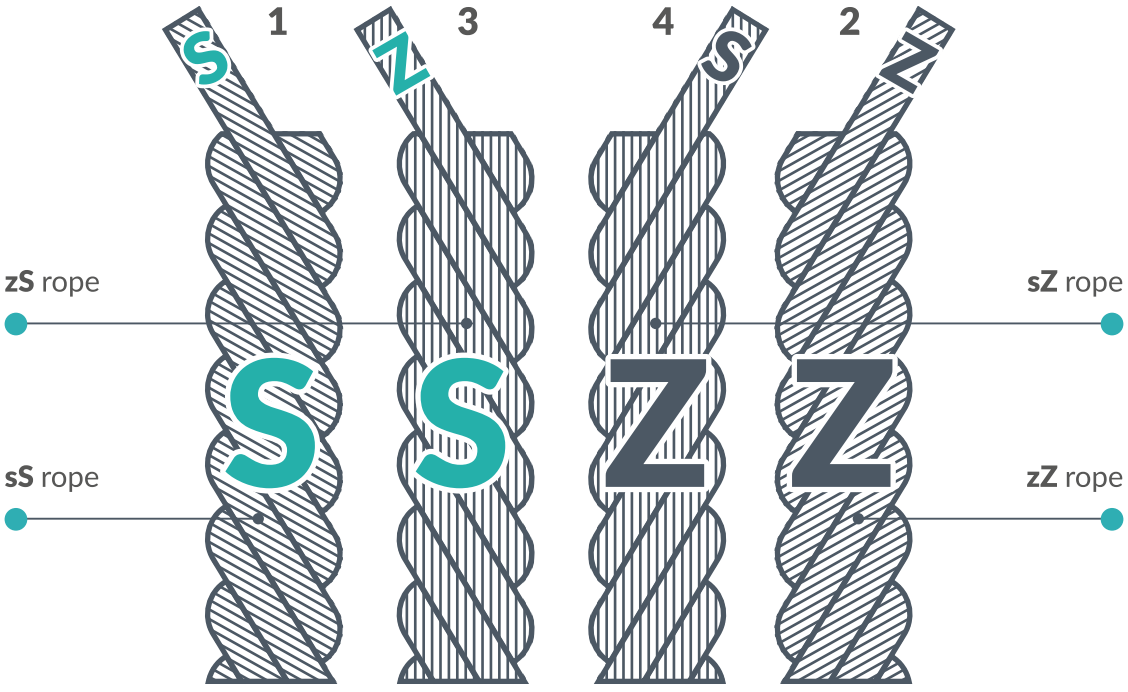
The direction of wires in the lay and lays in the rope is right, the arrangement is designated **zZ**

3) Left regular (LR)

The direction of wires in the lay is right and the lays in the rope is left, the arrangement is designated **zS**

4) Right regular (RR)

The direction of wires in the lay is left and the lays in the rope is right, the arrangement is designated **sZ**



Steel wire ropes selection - General principles

The durability of a wire rope in specified working conditions depends not only on the quality of wires used to produce it and the manufacture technology, but also on selecting a suitable rope construction for the given working conditions as well as on observing the defined exploitation rules. For this reason, familiarity with the dependence of the ropes durability on the conditions they work in is indispensable not only for the ropes designers but also for the users.

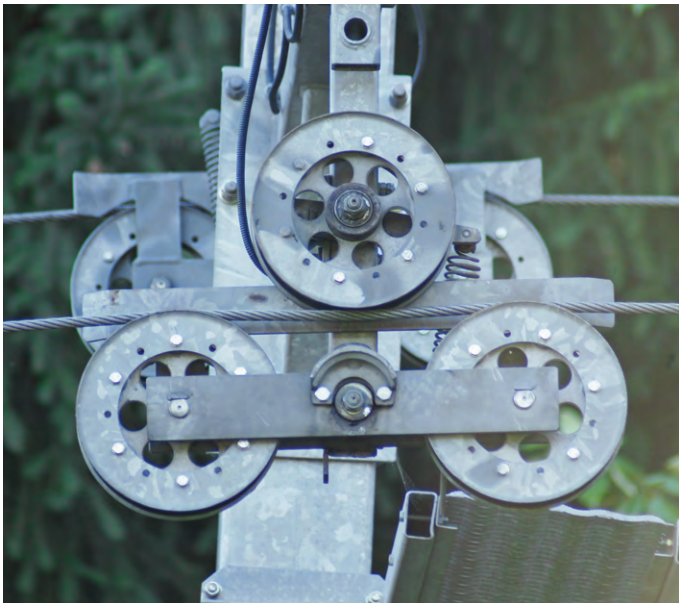
Before selecting the design and strength of a rope for a given device, one should, first of all, be aware of the fact that for each device there is an optimal rope which features not only a greater durability during operation on this device, but which also ensures greater safety of work. During operation, a steel wire rope is exposed not only to fatigue but also to a number of factors both from the side of the mechanisms on which it works and the atmospheric elements.

A premature wear of a wire rope may occur for the following reasons:

- **Incorrect selection of the rope design, its type and lay**
- **Incorrect selection of the drums and rope sheaves as well as its incoreect winding on the drum**
- **Incorredct material and wrong profile and size of the drum and sheaves grooves**
- **Excessive tensille and bending stress**
- **Great bending angle of the rope**
- **Incorrect bending of the rope**
- **Excessive exploitation of the rope**
- **The rope corrosion**

The diameter and the tensile strength of a rope are selected having in mind the load the rope is to carry, on the one hand, and the safety factor, usually specified by some applicable regulations.

If a rope is over-bent (wrapped) on the drum or sheaves during operation, then the rope diameter and design should be matched in a way maintaining proper proportions D/d and D/Ø (where D – drum or sheave diameter, d – rope diameter, Ø – wire diameter).



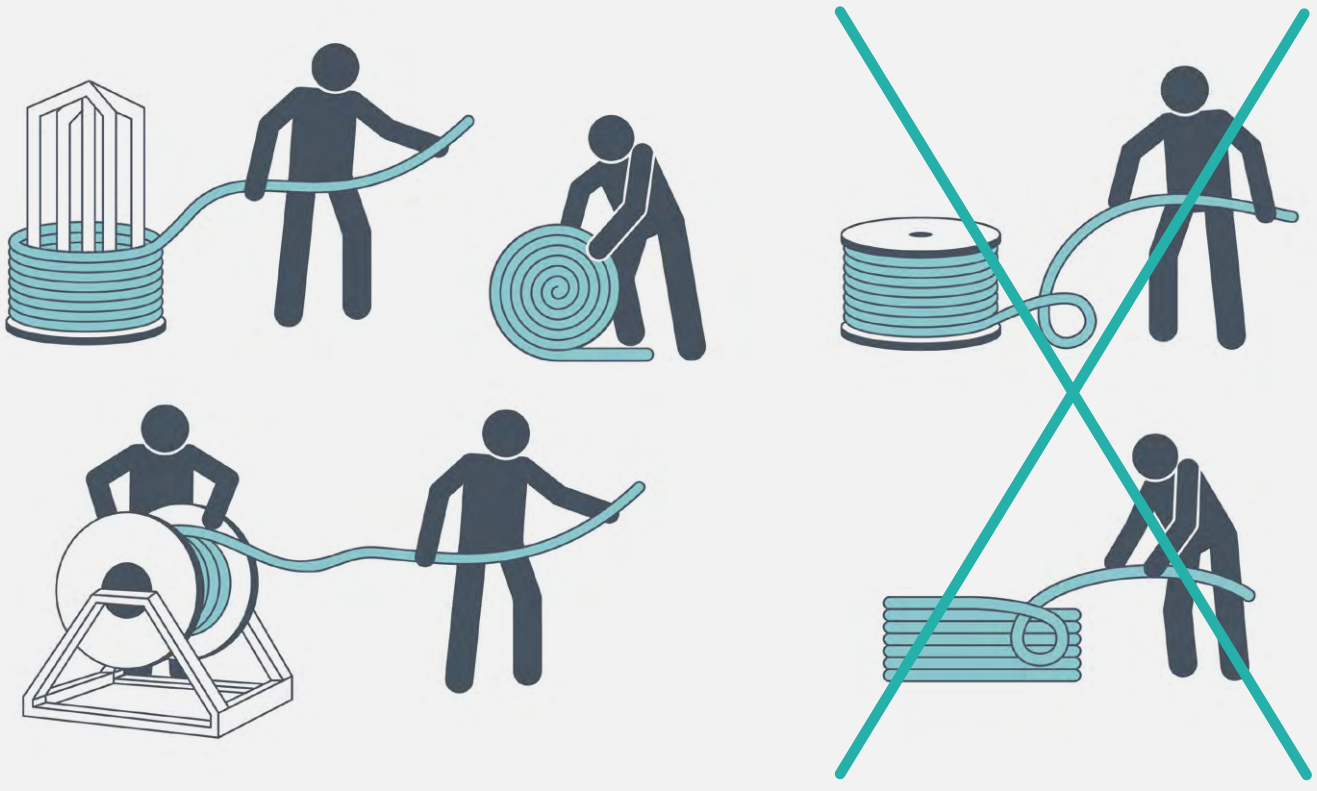
For ropes exposed in operation mainly to abrasive action or to intensive corrosion, a design should be selected in which the diameter of wires in the external layer is the greatest. Nevertheless, it should be remembered that a rope made of thick wires is much more rigid than a rope made of thinner wires.

If, for some specific working conditions, a rope with a great number of wires is selected, it should be taken in consideration that it has more contact points, or contact lines, between the wires, which increases internal friction and may be the cause of premature wear of the rope. Ropes consisting of great number of fine wires have greater flexibility than other ropes, but they are less resistant to transverse pressure, faster become distorted in case of many-layer winding on the drum, and susceptible to faster damage in case of the rope friction against the sheaves and extensive corrosion.

Ways to unreel and uncoil wire rope

Incorrect rope unreeling/uncoiling may be the cause of the rope damage and significant reduction of its working life. For cutting the holding tapes shears for metal should be used; in no case, a chisel should be used or other sharp tools which may damage the rope. Failure to observe these rules of operating the ropes in transport and assembly will cause the loss of any rights to statutory warranty, implied warranty and other claims in any form, as well as it can be the cause of serious break-downs and, in consequence, accidents in work while operating cranes and lifting devices.

Unreeling from coil/drum



CORRECT

WRONG

Packages of steel wire ropes

The way of confectioning and the form of packing the steel wire ropes is agreed each time with the customer and depends on the diameter and length of the rope and customer's additional requirements (additional protection of the rope). The following packagings and securities are used for steel wire ropes:

Wooden reels are non-returnable packaging

- Outer side of rope is wrapped by stretch foil

Wooden spools are non-returnable packaging

- Outer side of rope is wrapped by stretch foil

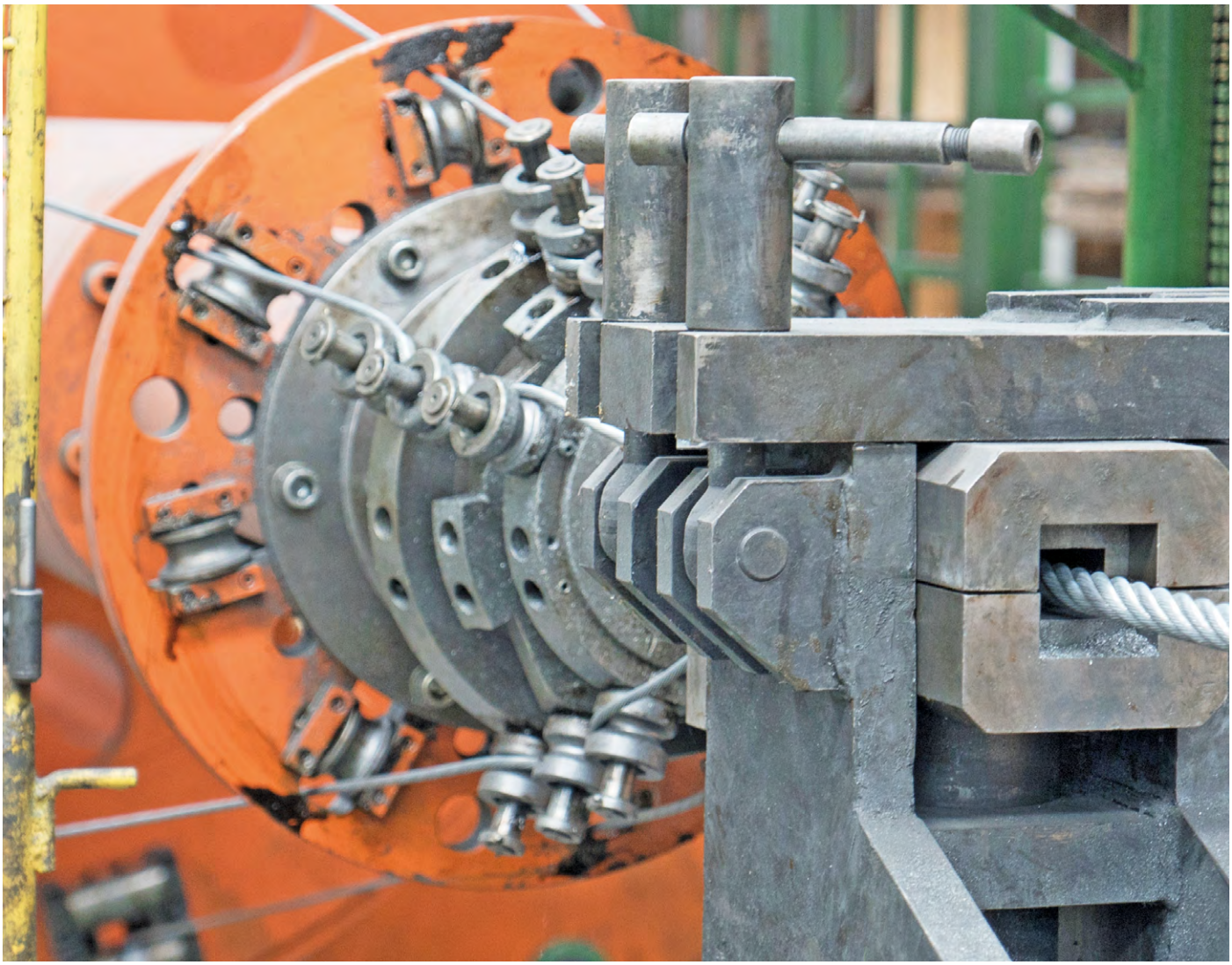
Coils

- Secured with steel fastening tape
- Secured with steel fastening tape and stretch foil (on customer's request)

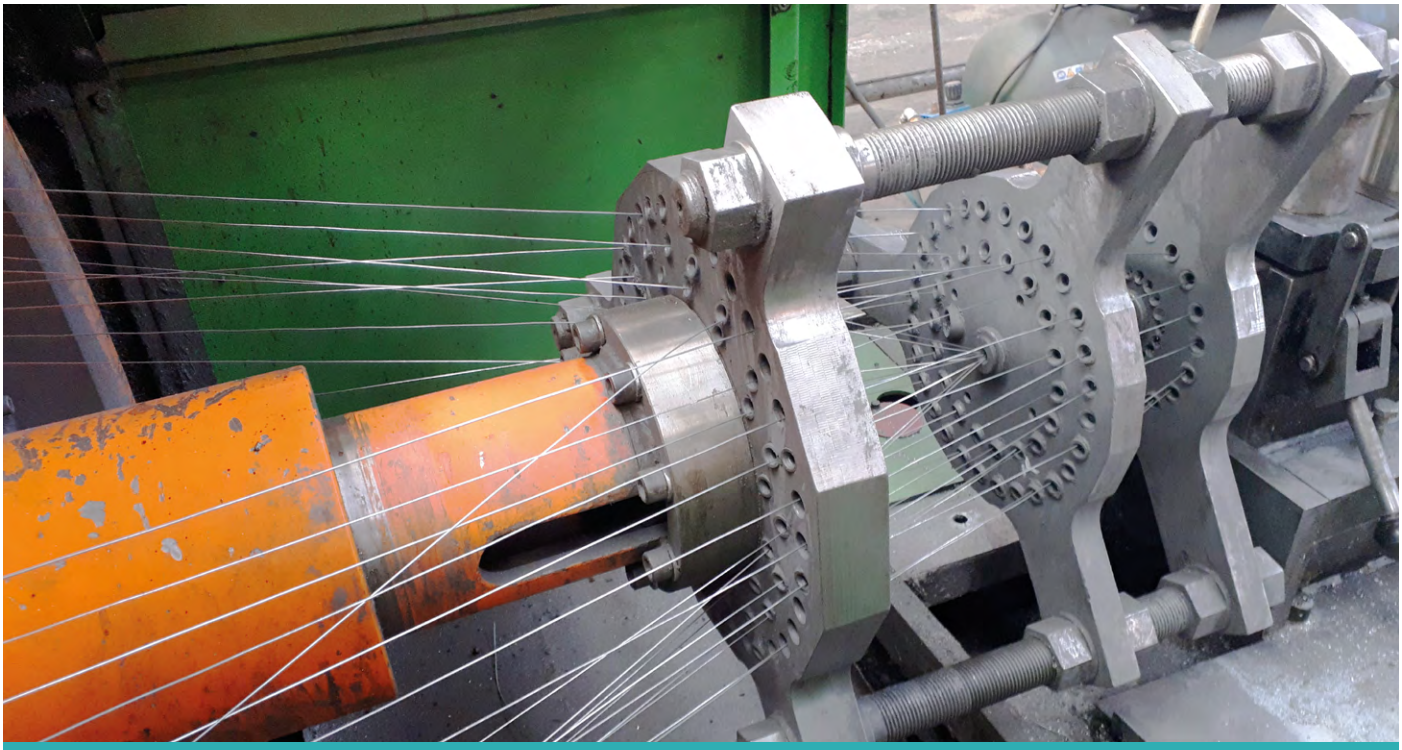
Applications of steel wire ropes

Steel wire ropes produced by Świdnicka Fabryka Lin i Drutu LINOSTEEL Sp. z o.o. find numerous applications. They are used in various types of devices for vertical and horizontal transport, including cranes, conveyors, cargo and passenger lifts, towing winches, mountain cableways and ski lifts, container terminals, drilling shafts, mining machines and as carrying ropes in power and telecommunication cables automotive and bicycle connection strings, winding/tension cords, trawler and mooring ropes, etc.

Steel wire ropes are also utilized in steering control devices used in shipping and aviation industry.



The plant production scope



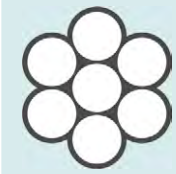
Świdnicka Fabryka Lin i Drutu „Linosteel" Sp. z o.o. produces:

- strands of construction
  - 1x7
  - 1x19M
  - 1x37M

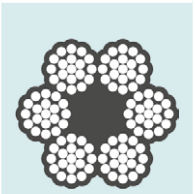
- 6-strand steel wire ropes with linear contact of the wires, design
  - 6x19 SEALE-NFC/SFC/WSC/IWRC
  - 6x19 FILLER-NFC/SFC/WSC/IWRC
  - 6x19 WARRINGTON-NFC/SFC/WSC /IWRC
  - 6x31 WARRINGTON-SEALE-NFC /SFC/WSC/IWRC
  - 6x36 WARRINGTON-SEALE-NFC /SFC/WSC/IWRC

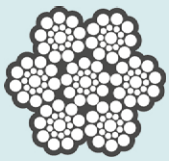
- 6-strand steel wire ropes with point contact of the wires, design
  - 6x7M-NFC/SFC/WSC/IWRC
  - 6x19M-NFC/SFC/WSC/IWRC
  - 6x37M-NFC/SFC/WSC/IWRC

- 8-strand steel wire ropes with linear contact of the wires, design
  - 8x19 SEALE-NFC/SFC/WSC/ IWRC
  - 8x19 FILLER-NFC/SFC/WSC/IWRC
  - 8x19 WARRINGTON-NFC/SFC/WSC /IWRC
  - 8x31 WARRINGTON-SEALE-NFC /SFC/WSC/IWRC
  - 8x36 WARRINGTON-SEALE-NFC / SFC/WSC/IWRC

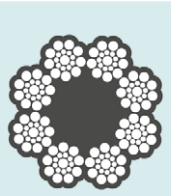
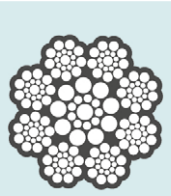
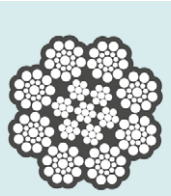
CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	WIRES IN STRAND	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STRANDS						
	from 0,9 mm to 6,3 mm	1X7	1x(1-6)	DIN 3052	EN 12385-10	of general application, carrying cords in power and telecommunication cables, automotive pulling strings, winding/ tension cords, bicycle strings
	from 1,0 mm to 10,0 mm	1X19M	1x(1-6/12)	DIN 3053	EN 12385-10	of general application, carrying cords in power and telecommunication cables, automotive pulling strings, winding/ tension cords, bicycle strings
	from 2,6 mm to 12,0 mm	1X37M	1x(1-6/12/18)	DIN 3054	EN 12385-10	of general application, carrying cords in power and telecommunication cables, automotive pulling strings, winding/ tension cords

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH POINT CONTACT OF THE WIRES						
	from 2,5 mm to 20,0 mm	6x7-FC	6x(1-6)	DIN 3055	EN 12385-4	of general application, trawl warps, ski lifts, window lifting mechanism, gardening, agriculture, forestry
	from 2,5 mm to 20,0 mm	6x7-WSC	6x(1-6)+1x(1-6)	DIN 3055	EN 12385-4	of general application, trawl warps, ski lifts, window lifting mechanism, gardening, agriculture, forestry
	from 8,0 mm to 20,0 mm	6x7-IWRC	6x(1-6)+1x(7x7)	DIN 3055	EN 12385-4	of general application, trawl warps, ski lifts, window lifting mechanism, gardening, agriculture, forestry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH POINT CONTACT OF THE WIRES						
	from 4,0 mm to 20,0 mm	6x19M–FC	6x(1-6/12)	DIN 3060	EN 12385-4	trawl warps, winches, railings, pulley blocks, winches for manure / automatic shovels, mining industry, shipbuilding industry
	from 4,0 mm to 20,0 mm	6x19M–WSC	6x(1-6/12)+ 1x(1-6/12)	DIN 3060	EN 12385-4	of general application , trawl warps, winches, railings, pulley blocks, winches for manure / automatic shovels, mining industry, shipbuilding industry
	from 8,0 mm to 20,0 mm	6x19M–IWRC	6x(1-6/12)+ 1x(7x7)	DIN 3060	EN 12385-4	of general application, trawl warps, winches, railings, pulley blocks, winches for manure / automatic shovels, mining industry, shipbuilding industry
	from 8,0 mm to 40,0 mm	6x37M–FC	6x(1-6/12/18)	DIN 3066	EN 12385-4	of general application, mooring lines, anchoring lines, trawl warps, winches for manure / automatic shovels, overhead cranes mining industry, shipbuilding industry
	from 8,0 mm to 40,0 mm	6x37M–WSC	6x(1-6/12/18)+ 1x(1-6/12/18)	DIN 3066	EN 12385-4	of general application, mooring lines, anchoring lines trawl warps, winches for manure / automatic shovels, overhead cranes mining industry, shipbuilding industry
	from 8,0 mm to 40,0 mm	6x37M–IWRC	6x(1-6/12/18)+ 1x(7x7)	DIN 3066	EN 12385-4	of general application, mooring lines, anchoring lines, trawl warps, winches for manure / automatic shovels, overhead cranes mining industry, shipbuilding industry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES - 6 -STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: SEALE						
	from 8,0 mm to 30,0 mm	6x19 Seale–FC	6x(1-9-9)	DIN 3058	EN 12385-4	of general application, trawl warps, passenger/cargo lifts, mining industry, shipbuilding industry
	from 8,0 mm to 30,0 mm	6x19 Seale–WSC	6x(1-9-9)+1x(1-9-9)	DIN 3058	EN 12385-4	of general application, passenger/cargo lifts, industrial cranes, mining industry, shipbuilding industry
	from 8,0 mm to 30,0 mm	6x19 Seale–IWRC	6x(1-9-9)+1x(7x7)	DIN 3058	EN 12385-4	of general application, passenger/cargo lifts, industrial cranes, mining industry, shipbuilding industry
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON						
	from 8,0 mm do 30,0 mm	6x19 Warrington –FC	6x(1-6-6+6)	DIN 3059	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes, mining industry, shipbuilding industry
	from 8,0 mm to 30,0 mm	6x19 Warrington –WSC	6x(1-6-6+6)+ 1x(1-6-6+6)	DIN 3059	EN 12385-4	of general application, passenger/cargo lifts, industrial cranes, mining industry, shipbuilding industry
	from 8,0 mm to 30,0 mm	6x19 Warrington –IWRC	6x(1-6-6+6)+ 1x(7x7)	DIN 3059	EN 12385-4	of general application, passenger/cargo lifts, industrial cranes, mining industry, shipbuilding industry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES - 6 -STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: FILLER						
	from 10,0 mm to 32,0 mm	6x19 Filler–FC	6x(1-6-6F-12)	DIN 3057	EN 12385-4	of general application, mining industry, shipbuilding industry
	from 10,0 mm to 32,0 mm	6x19 Filler–WSC	6x(1-6-6F-12)+ 1x(1-6-6F-12)	DIN 3057	EN 12385-4	of general application, mining industry, shipbuilding industry
	from 10,0 mm to 32,0 mm	6x19 Filler–IWRC	6x(1-6-6F-12)+ 1x(7x7)	DIN 3057	EN 12385-4	of general application, mining industry, shipbuilding industry
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON SEALE						
	from 10,0 mm to 32,0 mm	6x31 Warrington Seale–FC	6x(1-6-6+6-12)		EN 12385-4	of general application, overhead cranes, passenger/cargo lifts, mining industry, shipbuilding industry
	from 10,0 mm to 32,0 mm	6x31 Warrington Seale–WSC	6x(1-6-6+6-12)+ 1x(1-6-6+6-12)		EN 12385-4	of general application, winches,overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
	from 10,0 mm to 32,0 mm	6x31 Warrington Seale–IWRC	6x(1-6-6+6-12)+ 1x(7x7)		EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES – 6-STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON SEALE						
	from 10,0 mm to 36,0 mm	6x36 Warrington Seale–FC	6x(1-7-7+7-14)	DIN 3064	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mining industry, shipbuilding industry
	from 10,0 mm to 36,0 mm	6x36 Warrington Seale–WSC	6x(1-7-7+7-14)+ 1x(1-7-7+7-14)	DIN 3064	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
	from 10,0 mm to 36,0 mm	6x36 Warrington Seale–IWRC	6x(1-7-7+7-14)+ 1x(7x7)	DIN 3064	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES - 8 -STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: SEALE						
	from 16,0 mm to 32,0 mm	8x19 Seale–FC	8x(1-9-9)	DIN 3062	EN 12385-4	of general application , trawl warps, passenger / cargo lifts, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x19 Seale–WSC	8x(1-9-9)+ 1x(1-9-9)	DIN 3062	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes, of general application, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x19 Seale–IWRC	8x(1-9-9)+1x(7x7)	DIN 3062	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes, mining industry, shipbuilding industry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES - 8 -STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON						
	from 16,0 mm to 30,0 mm	8x19 Warrington–FC	8x(1-6-6+6)	DIN 3063	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes,mining industry, shipbuilding industry
	from 16,0 mm to 30,0 mm	8x19 Warrington–WSC	8x(1-6-6+6)+ 1x(1-6-6+6)	DIN 3063	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes, mining industry, shipbuilding industry
	from 16,0 mm to 30,0 mm	8x19 Warrington–IWRC	8x(1-6-6+6)+1x(7x7)	DIN 3063	EN 12385-4	of general application, passenger / cargo lifts, industrial cranes, mining industry, shipbuilding industry
STEEL WIRE ROPES OF DESIGN TYPE: FILLER						
	from 16,0 mm to 32,0 mm	8x19 Filler–FC	8x(1-6-6F-12)	DIN 3061	EN 12385-4	of general application, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x19 Filler–WSC	8x(1-6-6F-12)+ 1x(1-6-6F-12)	DIN 3061	EN 12385-4	of general application, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x19 Filler–IWRC	8x(1-6-6F-12)+ 1x(7x7)	DIN 3061	EN 12385-4	of general application, mining industry, shipbuilding industry

CROSS-SECTION	ROPE DIAMETER	STRAND DESIGN	STRAND DESIGN	EXECUTION STANDARDS		APPLICATION
				DIN	EN	
STEEL WIRE ROPES WITH LINEAR CONTACT OF THE WIRES - 8 -STRAND						
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON SEALE						
	from 16,0 mm to 32,0 mm	8x31 Warrington Seale–FC	8x(1-6-6+6-12)		EN 12385-4	of general application, overhead cranes, passenger / cargo lifts, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x31 Warrington Seale–WSC	8x(1-6-6+6-12)+ 1x(1-6-6+6-12)		EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
	from 16,0 mm to 32,0 mm	8x31 Warrington Seale–IWRC	8x(1-6-6+6-12)+ 1x(7x7)		EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
STEEL WIRE ROPES OF DESIGN TYPE: WARRINGTON SEALE						
	from 16,0 mm to 36,0 mm	8x36 Warrington Seale–FC	6x(1-7-7+7-14)	DIN 3067	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mining industry, shipbuilding industry
	from 16,0 mm to 36,0 mm	8x36 Warrington Seale–WSC	6x(1-7-7+7-14)+ 1x(1-7-7+7-14)	DIN 3067	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry
	from 16,0 mm to 36,0 mm	8x36 Warrington Seale–IWRC	6x(1-7-7+7-14)+ 1x(7x7)	DIN 3067	EN 12385-4	of general application, winches, overhead cranes, passenger / cargo lifts, mine trains, mining industry, shipbuilding industry

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